

REV. 11

Contractors and Engineers Monthly

7TH TIER



Loading Earth for
Levee Enlargement
at Lake Providence,
Louisiana

The New EUCLID TU-WAY

Entirely different from all other types
of dirt-moving equipment

HERE is Euclid's latest contribution to the dirt-moving industry . . . the Tu-Way Dump Wagon that hauls rock or dirt at the lowest possible cost; a wagon that fills a vital need of every Dirt-Mover. Free from complicated mechanism; positive hydraulic lift action; carrying capacity 10 to 12 yard loads; short turning radius that eliminates need for rear dump; sturdy, reinforced, one-piece body construction; low body suspension for greater stability; mounted on famous 15-ton Euclid "track-wheels"; performance that excels ordinary truck operation . . . such a wagon is the new Euclid Tu-Way embodying many original and outstanding features, providing for simple trouble-free operation under all working conditions. Your franchised Euclid dealer has complete Tu-Way Wagon data ready to show you how to lower your hauling costs. See him without delay.

See the
EUCLID
TU-WAY
at the
ROAD
SHOW

ONE PIECE BODY • HAULS
10 YARDS OF ROCK OR DIRT •
DUMPS TO EITHER SIDE • BEATS
ALL OTHER HAULING COSTS



THE EUCLID ROAD MACHINERY COMPANY
CLEVELAND OHIO

JANUARY, 1933
VOLUME 25 NO. 1

3

TOM DIX, President THEODORE REED KENDALL, Editor
O. E. POTTER, Associate Editor
HERBERT K. SAXE, Treasurer P. C. FORD, Asst. to Pres.
MYRON MCLEOD, Advertising Manager

Contractors and Engineers Monthly

TABLE OF CONTENTS

BLASTING

- Wide Variety of Drilling Operations on Memorial Highway 18
Drilling and Blasting in Highway Grading—Part V 29

BOOK REVIEWS

- A Study of the Embrittlement of Hot-Galvanized Structural Steel 22
Economics of Construction Management 37

CONSTRUCTION BRIEFS

- How the Other Fellow Did It 33

CONSTRUCTION INDUSTRY NEWS

- News of Manufacturers and Trade Associations 43

CONSTRUCTION PROGRESS

- A Contributor—Robert Ridgway 35

CONSTRUCTION PROSPECTS

- Construction in 1933 15

DAM CONSTRUCTION

- Moto: Trucks Haul Material for Rock Fill Dam 23

Important for 1933—

¶ *Fight gas tax diversion. Highway construction is being hammered from every side. Federal Aid is being cut. Highway bonds and income are being used for doles. Highway construction is a fundamental industry in America's continued life and growth. Transportation by automobile and truck would be impossible on the roads of 1935. Road construction gives much needed employment, both direct and indirect. Fight FOR highway construction and AGAINST gas tax diversion.*

¶ *Don't bid at or below your costs on any job. You must make a profit to live.*

¶ *Remember your machines depreciate whether you use them or not. Watch new equipment and be prepared for CONSTRUCTION IN 1933.*

X746250

Published Monthly at 470 Fourth Avenue, New York, by Buttenheim-Dix Publishing Corporation. Branch Offices: Daily News Building, Chicago, Tom Dix, President; 642 Hanna Building, Cleveland, George Conover, Manager. Price 25 cents; \$1 a year. Entered as second-class matter April 1, 1923, at the post office at New York, N. Y., under Act of March 3, 1879. Printed in U. S. A.

THE EDITOR COMMENTS

- Personal Observations and Reflections 33

THE EQUIPMENT DISTRIBUTOR

- Portraits of A. E. D. Officers 36
Annual Meeting of the Associated Equipment Distributors 37

HARBOR WORKS

- Removal of the World's Largest Cofferdam 24

ITEMS OF INTEREST

- Power Shovels Eighty Years Ago 20
Simplified Practice Recommendation Covering Asphalt 31
Contract Maintenance Adopted by New York State 37
Vitrified Paving Brick Simplified Practice Continued 43
New Equipment Brings Profits 50

LAW AND LITIGATION

- Legal Points for Contractors 34

LEVEE CONSTRUCTION

- Change of Methods in Loop Levee Enlargement 25

ROAD CONSTRUCTION

- Economies on a 5-Mile Top Soil Road 19
Speeding Up a Bay State Road Job 27
Cotton Fabric for Road Building 48

ROAD SHOW—JANUARY 16-20

- The 1933 Highway and Building Congress and Road Show 24
Notes of Exhibits 39

SAFETY IN CONSTRUCTION

- Decrease in Blasting Cap Accidents 22
Building America's Roads Safely 32

WINTER CONSTRUCTION

- Winter Construction—Part IV—Handling and Heating of Aggregates 21

They're Moving Dirt for 4.95¢ per Cu. Yd. » » » » » » » in Missouri

The song of the DIRTMOVER is cheap dirt—lower and lower cost per yard.

Martin Wunderlich Construction Company, Jefferson City, Mo., were up to their ears in tough red clay and Missouri gumbo—a road grading job—and used their Blaw-Knox (Ateco) Hydraulic DIRTMOVER to do the work at 4.95¢ per cubic yard.

the
low
cost

DIRTMOVER



Dirtmovers Bulldozers Scarifiers Tamping Rollers Wagon Graders Clamshell Buckets Dragline Buckets

At that rate—it don't take long to pay for equipment—and make a profit while paying for it.

Yardage costs such as this, and lower, are a matter of common record. We would like to tell you about contractors who are making real money out of all kinds of dirt moving jobs.

May we send you a copy of Catalog No. 1372—"Blaw-Knox (Ateco) Dirt Moving Equipment"?

See the Blaw-Knox Exhibit at the Road Show—Detroit, Booth 145.

BLAW-KNOX COMPANY

Farmer's Bank Building, Pittsburgh, Pa.

Offices and Representatives in Principal Cities

BLAW-KNOX

Construction equipment, powered by Continental, always gives satisfactory, dependable and economical service. Performance and low operating costs are assured by the records of 3,500,000 Continental engines produced in the past 30 years.

Continental's laboratory engineering facilities and data are at your disposal. We invite you to write. Visitors to the Highway and Building Show at Detroit, Jan. 16 to 20, are invited to visit our plant.

Continental Engines

Continental Motors Corporation, Detroit • Muskegon

HOTEL

DETROIT-LELAND

SINGLE \$2⁵⁰

WITH BATH \$3⁵⁰

DOUBLE

800 ROOMS

CORNER CASS AND BAGLEY

Ref. 620.5
Shelfed w. 050

MAY 12 1933 3

FEBRUARY, 1933

VOLUME 26

NO. 2

TOM DIX, President THEODORE REED KENDALL, Editor
O. E. POTTER, Associate Editor P. C. FORD, Asst. to Pres.
H. K. SAXE, Treasurer MYRON MACLEOD, Advertising Manager
GEORGE CONOVER, Mgr., Cleveland Office

Contractors and Engineers Monthly

TABLE OF CONTENTS



BOOK REVIEWS	
The Book of A. S. T. M. Standards.....	15
A New Manual on Surface Treatment Types.....	26
BRIDGE CONSTRUCTION	
Five Major Bridge Projects Nearing Completion in Minnesota	34
The New Fulton Road Bridge, Cleveland.....	33
CONSTRUCTION IDEAS	
How the Other Fellow Did It	32
CONSTRUCTION INDUSTRY NEWS	
News of Manufacturers and Trade Associations.....	34
Valuable Information through Manufacturers' Catalogs.	43
THE EDITOR COMMENTS	
Personal Observations and Reflections.....	31
THE EQUIPMENT DISTRIBUTOR	
A. E. D. Plans Increased Activity	35
EQUIPMENT AND MATERIALS	
ASPHALT MACHINERY	
A Black Top Paver	39
A Bituminous Distributor with a Circulating Spray Bar	40
A New 2-Ton Asphalt Pugmill Mixer.....	40
BUCKETS	
A Dragline Bucket for Use on Levees and Similar Jobs	36
BULLDOZERS	
A Bigger Bulldozer for Bigger Tractors.....	38
CONCRETE MACHINERY	
A New Concrete Surfacer	37
A New Line of Truck Mixers and Agitators.....	41
A New Double Drum Paver	42
DIRT MOVERS	
A New Front-End Fresno for Tractors.....	37
A Hydraulic Scraper for Hard Digging.....	38
EXCAVATORS	
A New Heavy-Duty Dragline for Drainage and Levee Work	37
HOISTS AND WINCHES	
A New 3-Speed Hand Winch	41
LIGHTING UNITS	
A Portable Generator for Construction Light and Power	42
MATERIAL HANDLING EQUIPMENT	
A Bucket Loader with an Improved Feeding Device	39
MISCELLANEOUS	
Detachable Bits for Rock Drills.....	36
PUMPS	
A New Air-operated Portable Sump Pump.....	42
TRACTORS, CRAWLER	
A New 28-Horsepower Crawler Tractor.....	36
TRUCKS, MOTOR	
A Line of Diesel-Powered Trucks.....	39
WAGONS, DUMP	
A New Type of Dump Wagon.....	33
A 2-Way Dump Wagon for Handling Rock and Dirt	41
GRADE SEPARATIONS	
Unde passes Built Easily by Special Tools and Methods	16
ITEMS OF INTEREST	
A Study of the Effect of Hot Cement in Road Paving..	18
Modern Equipment and Skilled Labor Hasten Completion of Dirigible Base	24
Use Gas Tax for Roads Only	28
Ready-Mixed Concrete Used on Elevated Highway....	28
New Los Angeles Reservoir	35
Valuable Information through Manufacturers' Catalogs.	43
LEVEE CONSTRUCTION	
Walking Draglines on Levee Enlargement and Set-Back.	27
PIPE LAYING	
Cast Iron Pipe Laid over Western Hills Viaduct.....	23
ROAD CONSTRUCTION	
State Paving Financed by County Funds.....	19
Machine Production and Laying on a 24-Mile Black Top Job in Ohio	29
SAFETY IN CONSTRUCTION	
How to Make the Construction Job Safe.....	33
A Well-meant Warning Sign.....	33
WELDING	
Saving through Electric Welding on New Independent Subway System	13
WINTER CONSTRUCTION	
Winter Construction—Part V—Protection of Concrete..	15
Racing with Winter Weather	35

Published Monthly at 470 Fourth Avenue, New York, by Buttenheim-Dix Publishing Corporation. Branch Offices: Daily News Building, Chicago, Tom Dix, President; 642 Hanna Building, Cleveland, George Conover, Manager; 402 Monadnock Building, San Francisco, Calif., Duncan A. Scott, Price 25 cents; \$1 a year. Entered as second-class matter April 1, 1923, at the post office at New York, N. Y., under Act of March 3, 1879.

Printed in U. S. A.



ASPHALT PRODUCTS

Standard Cut-Back Surfacing Asphalt.

Standard Asphalt Binder A for surface treatment.

Standard Asphalt Binders B & C for penetration work (Asphalt Macadam).

Standard Paving Asphalt 51-60 and 61-70 Penetration for the mixing method (Asphaltic Concrete).

Standard Cold Patch Asphalt for all types of patching.

Standard Refined Asphalt for sheet asphalt paving.

Standard Asphalt Joint Fillers.

Standard Waterproofing Asphalt.

Specifications and all other particulars furnished on request.



STANDARD OIL COMPANY OF NEW YORK, INC . . . A SOCONY-VACUUM COMPANY . . . 26 Broadway

MARCH, 1933
VOLUME 26 NO. 3

3

TOM DIX, President THEODORE REED KENDALL, Editor
O. E. POTTER, Associate Editor
H. K. SAXE, Treasurer MYRON MACLEOD, Advertising Manager
GEORGE CONOVER, Mgr., Cleveland Office

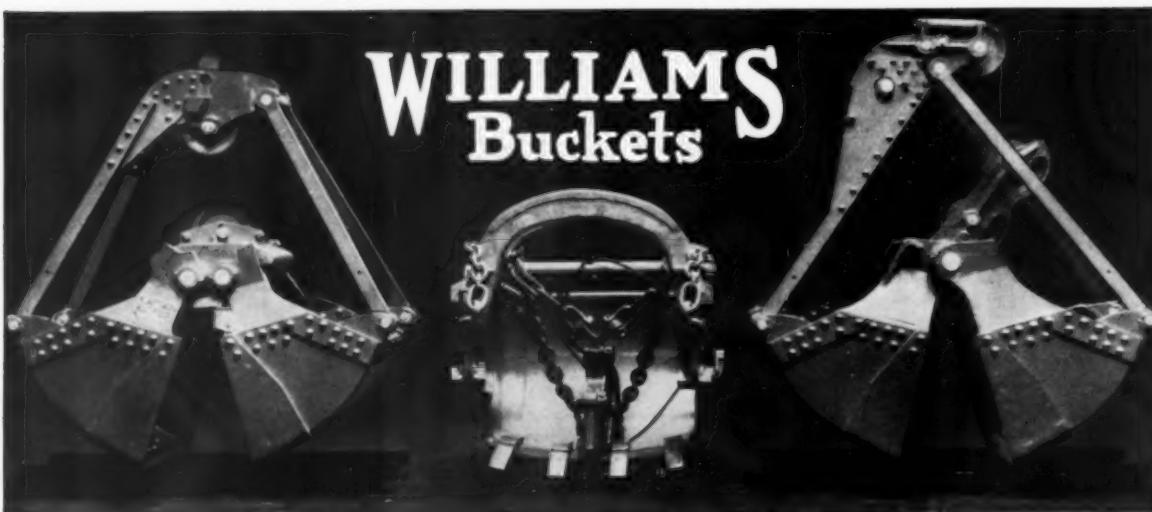
Contractors and Engineers Monthly

TABLE OF CONTENTS

BRIDGE CONSTRUCTION	
Widening Bridges on an Old Federal Aid Project.....	19
CONSTRUCTION IDEAS	
How the Other Fellow Did It.....	30
CONSTRUCTION INDUSTRY NEWS	
News of Manufacturers and Trade Associations.....	34
CONSTRUCTION PROGRESS	
A Contributor—Henry J. Kaiser.....	33
THE EDITOR COMMENTS	
Personal Observations and Reflections.....	31
THE EQUIPMENT DISTRIBUTOR	
Appointments and Changes in Personnel.....	35
EQUIPMENT AND MATERIALS	
ASPHALT MACHINERY	
A Utility Spray Tank	37
BATCHERS	
A New Automatic Cement-Weighing Batcher.....	37
CRUSHING, SCREENING AND LOADING PLANTS	
A New Line of Portable Jaw Crushers.....	36
A New Portable Crushing Plant with Large Hourly Capacity	38
DUMP BODIES	
A Cushioned Hydraulic Hoist for Dump Bodies....	37
ELECTRIC PLANTS	
Generators for Alternating Current	42
FLOODLIGHTING EQUIPMENT	
A Portable Light of 1,500 Candlepower.....	40
MISCELLANEOUS	
Improvements in Detachable Bit Grinder	36
An Expansion Joint of Cork	36
A Practical Trench Guard	36
Reclaiming Crankcase Oil	40
A Governor for Truck Speeds	42
PUMPS	
An Addition to Line of Pumping Units.....	42
ROAD MACHINERY	
A Multi-Pin Planing Mixer for Road-Mix Jobs.....	36
A Portable Grinder for Concrete Bumps	38
A Retread Mixer-Leveler	40
WAGONS, CRAWLER	
A 12-Yard Bottom-Dump Wagon.....	38
GRADING	
Fast Work on Shallow Cut and Fill.....	29
ITEMS OF INTEREST	
Simplified Practice Recommendation on Wheelbarrows..	26
Patrick McGovern—Contractor	28
A New Standard on Forms for Concrete Joist Construction Floors	34
Obtaining Unemployment Relief	35
Motorists Pay 24.4 Per Cent of Value of Vehicles Annually in Taxes	35
New Bridge Opened Across Hudson River at Albany, N. Y.	35
Don't Get Out-of-Date—Consult These Catalogs.....	44
LAW AND LITIGATION	
Legal Points for Contractors	32
LEVEE CONSTRUCTION	
Crawler Wagons on Levee Enlargement.....	22
RIVER AND HARBOR WORK	
Cleaning a River Channel.....	27
ROAD CONSTRUCTION	
Tandem Pavers on a 20.5-Mile Job in South Carolina...	13
From Stream Bed to Surfaced Road	25
WELDING	
Arc Welding a 6,000,000-Gallon Water Storage Tank...	28

Published Monthly at 470 Fourth Avenue, New York, by Buttenheim-Dix Publishing Corporation. Branch Offices: Daily News Building, Chicago, Tom Dix, President; 642 Hanna Building, Cleveland, George Conover, Manager; 402 Monadnock Building, San Francisco, Calif., Duncan A. Scott. Price 25 cents; \$1 a year. Entered as second-class matter April 1, 1923, at the post office at New York, N. Y., under Act of March 3, 1879. Printed in U. S. A.

SPEED DEMONS that will cut your costs



MULTIPLE - ROPE

The Williams multiple-rope bucket has a double hinge which permits a wider spread of the open bucket and a more rigid construction. Six-part reeving gives straightest lead of closing cable.

Write for bulletin.

DRAGLINE

The lightness and perfect balance of the Williams dragline bucket permit freer handling and a maximum of payloads. All points of stress and wear are of special design and strongly reinforced.

Write for bulletin.

THE WELLMAN ENGINEERING CO.

7012 Central Ave., Cleveland, Ohio

Birmingham Chicago New York Detroit Pittsburgh Mexico City

POWER - ARM

The Williams power-arm bucket has the Williams exclusive power-arm combination of lever and block-and-tackle which reduces handling time by developing greater digging power with less cable over haul.

Write for bulletin.



THE MARBERG DETACHABLE BIT GRINDER

Re-sharpens

Ingersoll-Rand

Thurston

Crusca

Timken

Or any other make of bit
By simply changing holders
Electric or pneumatic drive.

Folder sent upon request

THE MARBERG COMPANY
32 Mechanics Avenue
Woonsocket, R. I.

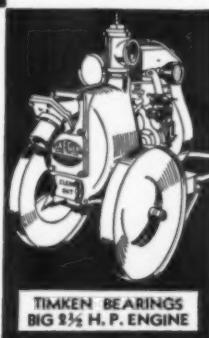
ONLY \$162.50

f. o. b. Columbus, buys
10,000 GAL., 2"
"SURE-PRIME"
CENTRIFUGAL
(WITH STRAINER ONLY \$165)

This rugged, powerful, little pump handles more water and serves more jobs for you, single handed or in tandem or multiple. Performs at lifts and heads where many pumps quit. Larger sizes at similar low prices. Write us for new catalog, just out.

THE JAEGER MACHINE CO.
701 Dublin Ave., Columbus, Ohio

OTHER JAEGER
"SURE PRIME" PUMPS
3"-4"-6" SIZES



LET THE
GENERAL
AND HIS STAFF
SHOVEL - DRAGLINE - PUSHERHOE - CLAMHELL - CRANE - SHIMMER
make your SPRING DRIVE *success!*

The BIG MACHINE! of its class.
Speed? Yardage? Service? Yes! and plenty of it.
Write for further information or a demonstration.

Distributors in principal cities

THE GENERAL EXCAVATOR COMPANY
MARION, OHIO, U.S.A.

APRIL, 1933
VOLUME 26 NO. 4

TOM DIX, President THEODORE REED KENDALL, Editor
O. E. POTTER, Associate Editor
H. K. SAXE, Treasurer MYRON MACLEOD, Advertising Manager
GEORGE CONOVER, Mgr., Cleveland Office

Contractors and Engineers Monthly

TABLE OF CONTENTS

BOOK REVIEWS

- The 1932 Proceedings of the American Society for Testing Materials 16

BRIDGE CONSTRUCTION

- Building the Bohemia River Bridge 13

CONSTRUCTION IDEAS

- How the Other Fellow Did It 30

CONSTRUCTION INDUSTRY NEWS

- News of Manufacturers and Trade Associations 32

CONSTRUCTION PROGRESS

- A Contributor—Thomas Crimmins 29

DAM CONSTRUCTION

- Construction Progress at Hoover Dam 26

THE EDITOR COMMENTS

- Personal Observations and Reflections 31

EQUIPMENT AND MATERIALS

ASPHALT EQUIPMENT

- A 1933 Pressure Distributor 35

BUCKETS

- A One-Piece Renewable-Lip Power Shovel Dipper 33

COMPRESSORS, AIR

- A New Portable Two-Stage Air-Cooled Compressor 40

CONCRETE MACHINERY

- New Buckets Handle Stiff Concrete 33

CRUSHING AND SCREENING PLANTS

- A Portable Crushing, Screening and Loading Plant 34

EXCAVATORS

- A New Crawler Shovel and Crane 36

- A Bucket-Type Dredger and Ditch Cleaner 38

MATERIAL HANDLING EQUIPMENT

- A New Portable Belt Feeder 34

MISCELLANEOUS

- Triple-Treated Detachable Bits 35
Air Conditioning for Motor Trucks 38
New Features of Highway Guard Rail 40
Portable Runs for Soft Ground 40

ROAD MACHINERY

- Hydraulic Control on a Leaning Wheel Grader 36

SCALES

- A Wheelbarrow Platform Scale 35

TRACTORS

- A Giant Tractor 33

TRUCKS, MOTOR

- New 1933 Truck Models 34
A New Half-Ton Truck 36

WAGONS, CRAWLER

- A New Model 10 to 13-Yard Crawler Wagon 38

ITEMS OF INTEREST

- A \$75,000,000 Loan to the Port of New York Authority 16
Installing a 250-Foot Culvert Through a Levee 16
The Nature of Structural Damage in the Long Beach Earthquake 25
Simplified Practice Recommendation for Wheelbarrows 25
New Catalogs of Construction Equipment 42

RIVER AND HARBOR WORK

- A Steel Pile and Concrete Breakwater Wall at Key West, Fla. 17

ROAD CONSTRUCTION

- Truck Mixers Pave 7.35 Miles 21
Pavement Widening Operations 27

Published Monthly at 470 Fourth Avenue, New York, by Buttenheim-Dix Publishing Corporation. Branch Offices: Daily News Building, Chicago, Tom Dix, President; 642 Hanna Building, Cleveland, George Conover, Manager; 402 Monadnock Building, San Francisco, Calif., Duncan A. Scott. Price 25 cents; \$1 a year. Entered as second-class matter April 1, 1923, at the post office at New York, N. Y., under Act of March 3, 1879.

Printed in U. S. A.

for Lower Dirt Moving Costs—



The Blaw-Knox Low Cost DIRTMOVER--

The song of the Blaw-Knox (Atco) Hydraulic DIRTMOVER is cheap dirt, lower and lower cost per yard.

Yardage costs such as \$0.0495 per cubic yard, and lower, dependent upon length of haul—are a matter of common record. We would like to tell you about contractors who are making real money out of all kinds of dirt moving jobs.

Ask about the low cost DIRTMOVER.

The Blaw-Knox Hydraulic BULLDOZER--

—moves more dirt at less cost.

The rigid box type construction conserves tractor power by an amazing reduction in Bulldozer weight without sacrifice of strength. Easy and quick to put on—two way control, with positive downward pressure on the curved digging bowl—speedy bulldozing.

The hydraulic power which operates the digging bowl is concealed in the sidearm—away from dust and dirt.

Send for Bulletin No. 1394.

BLAW-KNOX COMPANY

2067 FARMERS BANK BLDG., PITTSBURGH, PA.

Offices and Representatives in Principal Cities

**INSURE PROFIT
with
BAY CITY SHOVELS
and
CRANES**

**6 TYPES
AND SIZES**

**1/8-yd.—Part Circle or Full Circle
1/2-yd.—Standard or Heavy Full Circle
3/4-yd.—Heavy Duty
1-yd.—Heavy Duty
3- to 18-Ton Cranes**

**MODERN DESIGN
Honestly Advertised—Fairly Priced
—FOR 20 YEARS—
Builders of Dependable Shovels—Cranes—Dredges**

**BAY CITY SHOVELS, Inc.
BAY CITY, MICH.**

Bituminous Road and Street Machinery

Tar Kettles

Asphalt Plants

Maintenance Machines

Surface and Tool Heaters

Kerosene Torches

Chausse Oil Burner Company

ELKHART

INDIANA

CONSTRUCTION EQUIPMENT

Pile Hammers

Whirlers

Pile Extractors

Cableways

Hoists

Bridge-operating

Derricks

Machinery

Write for descriptive catalogs.

McKIERNAN-TERRY CORPORATION

19 Park Row, New York

Distributors in Principal Cities

GASOLINE,
ELECTRIC
& STEAM
HOISTS



STEEL
DERRICKS
—
WHIRLERS
—
DREDGE
HOISTS



LAMBERT-NATIONAL HOISTS: STEELE & CONDUCT MACHINERY
**McKIERNAN-TERRY DOUBLE ACTING
PILE HAMMERS**

M A Y , 1 9 3 3
VOLUME 26 NO. 5

3

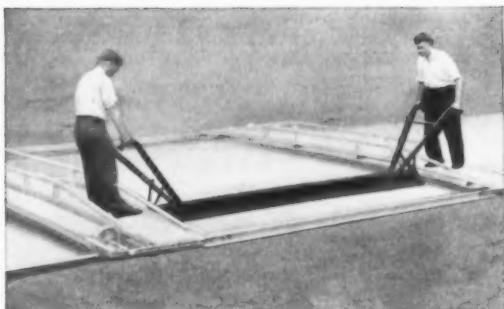
TOM DIX, President THEODORE REED KENDALL, Editor
O. E. POTTER, Associate Editor
HERBERT K. SAXE, Treas. MYRON MACLEOD, Advertising Manager
GEORGE CONOVER, Mgr., Cleveland Office

Contractors and Engineers Monthly

TABLE OF CONTENTS

ACCOUNTING	
A Simplified One-Sheet Cost Record for Contractors.....	21
CONSTRUCTION IDEAS	
How the Other Fellow Did It.....	32
CONSTRUCTION INDUSTRY NEWS	
News of Manufacturers and Trade Associations.....	34
THE EDITOR COMMENTS	
Personal Observations and Reflections.....	31
EQUIPMENT AND MATERIALS	
COMPRESSORS, AIR	
A 505-Foot Two-Stage Portable Compressor.....	38
CONCRETE MACHINERY	
A New 10-S Drum-Type Mixer.....	36
An Automatic Water Weighing and Measuring Tank	38
CRUSHERS	
Roller Bearing Rock Crushers.....	35
DIRT MOVERS	
A Bottomless Hydraulically-Operated Scraper.....	40
ENGINES, OIL, GAS AND DIESEL	
A Compact Air-Cooled Engine for Contractors.....	35
More Information on the Name Plate.....	38
MISCELLANEOUS	
Four-Wheel Drive for Light Trucks.....	39
An Improved Streamline Tire.....	40
A New Conveyor Belt.....	40
PUMPS	
A Simplified Self-Priming Pump.....	39
ROAD MACHINERY	
A New High-Lift Grader.....	35
A New Power-Controlled Grader.....	36
A Combined Drag and Checking Straight-Edge for Concrete	36
A Street and Highway Repair Truck.....	37
TRUCKS, MOTOR	
A New 2-Ton Truck.....	40
WHEELBARROWS	
A Rubber-Tired Wheelbarrow for Concrete.....	37
EXPLOSIVES	
Safety for the Occasional User of Dynamite.....	27
GRADING	
Excavation and Grading in the High Sierras.....	23
ITEMS OF INTEREST	
A Remarkable Record	20
A More Equitable Basis for Mechanics' Liens Provided.	34
Machinery and Materials	42
LAW AND LITIGATION	
Legal Points for Contractors.....	33
RIVER AND HARBOR WORK	
Enlarging a Creek Channel to Prevent Flooding.....	24
ROAD CONSTRUCTION	
Bulk Cement Batching in a Tobacco Warehouse.....	18
A Well-Run Grading and Top-Soil Job.....	29
TUNNEL CONSTRUCTION	
The Baltimore Water Tunnel Under City Streets.....	13

Published Monthly at 470 Fourth Avenue, New York, by Buttenheim-Dix Publishing Corporation. Branch Offices: Daily News Building, Chicago, Tom Dix, President; 642 Hanna Building, Cleveland, George Conover, Manager; 402 Monadnock Building, San Francisco, Calif., Duncan A. Scott. Price 25 cents; \$1 a year. Entered as second-class matter April 1, 1923, at the post office at New York, N. Y., under Act of March 3, 1879. Printed in U. S. A.



GiantGripT Paving Tools



GIANTGRIP HAND FLOATS and BULL FLOATS

Designed and dimensioned to meet state specifications everywhere, GiantgripT Floats are accurately cut from seasoned knot-free cypress and are fitted with dadoed cross cleats and lengthwise stiffeners to maintain their straightness on the job.

The BullFloat (Longitudinal Float) is available in 12 and 16-foot lengths and in varying widths to suit state requirements. Fitted with oak plowhandles adjustable to suit operator's height, and steel-braced.

The HandFloat is available in lengths from 3 to 10 feet and in widths to suit state specifications. Fitted with steel handle bracket which permits use with standard GiantgripT Straightedge Handle of steel tube. The drop-forged connector, an integral part of every GiantgripT Handle makes a tight and wiggle-proof connection between float and handle.

Send for new 1933 catalog "C" which describes the GiantgripT Line of paving hand tools.

L and M MANUFACTURING COMPANY

10276 Berea Road

Cleveland, Ohio

Steel Straightedges
Asphalt Straightedges
Hand and Split Floats
Concrete Finish Brooms
Floatbridges and all general construction tools

Aluminum Straightedges
Longitudinal Floats
Stamped and Cast Edgers
Center Joint Edgers

GIANTGRIP TOOLS MEET SPECIFICATIONS EVERYWHERE

NEW LOW PRICES

FOR THE SAME HIGH QUALITY
PORTABLE & STATIONARY

WISCONSIN POWER UNITS

25 TO 140 HORSEPOWER

Ask for Bulletin 160 before you buy

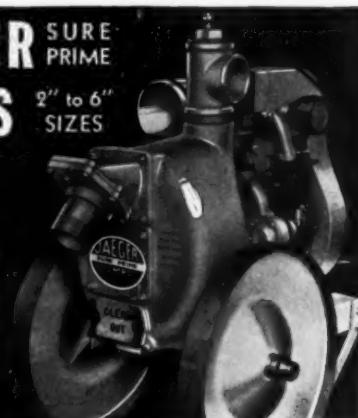
WISCONSIN MOTOR CORP.
MILWAUKEE WISCONSIN

JAEGER SURE-PRIME PUMPS

\$165.00

buys 10,000 Gal.
Size Complete

Write for new
catalog, new
low prices to
The JAEGER
MACHINE
CO.,
701 Dublin Ave.
COLUMBUS, O.



Bituminous Road and Street Machinery

Tar Kettles

Maintenance Machines

Surface and Tool Heaters

Kerosene Torches

Asphalt Plants

CONSTRUCTION EQUIPMENT

Pile Hammers
Pile Extractors
Hoists
Derricks

Whirlers
Cableways
Bridge-operating
Machinery

Write for descriptive catalogs.

McKERNAN-TERRY CORPORATION

19 Park Row, New York

Distributors in Principal Cities

GASOLINE,
ELECTRIC
& STEAM
HOISTS



STEEL
DERRICKS
— WHIRLERS —
DREDGE
HOISTS



LAMBERT-NATIONAL HOISTS: STEELE & CONDICT MACHINERY
McKERNAN-TERRY DOUBLE ACTING
PILE HAMMERS

Chausse Oil Burner Company
ELKHART INDIANA

JUNE, 1933
VOLUME 26 NO. 6

TOM DIX, President THEODORE REED KENDALL, Editor
O. E. POTTER, Associate Editor
HERBERT K. SAXE, Treas. MYRON MACLEOD, Advertising Manager
GEORGE CONOVER, Mgr., Cleveland Office

Contractors and Engineers Monthly

TABLE OF CONTENTS

CONSTRUCTION IDEAS	
How the Other Fellow Did It.....	32
CONSTRUCTION INDUSTRY NEWS	
News of Manufacturers and Trade Associations.....	33
CONSTRUCTION PROGRESS	
A Contributor—C. M. Babcock.....	29
THE EDITOR COMMENTS	
Personal Observations and Reflections.....	31
EQUIPMENT AND MATERIALS	
ASPHALT EQUIPMENT	
A Bituminous Material Tank Car Heater.....	40
BUCKETS	
A New Type of Dragline Bucket.....	36
BULLDOZERS	
A New Hydraulic Bulldozer.....	37
COMPRESSORS, AIR	
A Service Compressor.....	36
CRUSHERS	
Hammermill Crushers	35
DIRT MOVERS	
A New Four-Drum Power Control for Wheeled Scrapers	34
Wheel Scoops for Grading.....	38
ENGINES, OIL, GAS AND DIESEL	
Diesel Power Units	37
EXCAVATORS	
A 2-Yard Shovel.....	36
A New and Larger Walking Dragline.....	40
MISCELLANEOUS	
A New Roller Bearing Idler.....	37
PNEUMATIC EQUIPMENT	
Internal Vibration for Compacting Dry Concrete... .	31
ROAD MACHINERY	
A New Bituminous Mixer.....	34
A Power-Controlled Elevating Grader.....	35
A New 3-Wheel Gas Roller.....	37
A Mixer Built for Cold Patch.....	38
A New Surface Roller.....	38
SCREENS, VIBRATOR	
A Positive-Drive Vibrator Screen.....	35
TRACKS, CRAWLER	
A New Track for Crawler Wagons.....	34
TRAILERS	
A New Tandem-Axle Machinery Trailer.....	40
WAGONS, DUMP	
New Three-Way Crawler Dump Wagon.....	38
GRADE ELIMINATIONS	
Fine Form Work.....	19
GRADING	
Helping Nature Settle Fills.....	27
Highway Grading in the Kentucky Mountains.....	30
ITEMS OF INTEREST	
Boulder Dam Intake Gates Provide 250,000 Man-Hours of Work	16
One Paving Job Aids 29 Counties.....	22
Paint Specifications of State Highway Departments....	26
Moving 25,000 Yards in 286 Hours.....	26
New A. S. T. M. Tentative Specifications.....	26
The Field for Low-Cost Road Construction.....	30
Idaho Passes Contractors' License Law.....	30
Up-to-the-Minute Points from Manufacturers.....	42
ROAD CONSTRUCTION	
Playing Chess with Grading Equipment.....	13
Paving Southern State Parkway.....	23
SAFETY	
Never Transport Explosives and Detonators Together..	33
SEWAGE TREATMENT PLANT CONSTRUCTION	
Pouring 3,400 Yards of Concrete with a 2-Bag Mixer....	15
WEATHER CONDITIONS	
Protecting Profit in Bad Weather.....	17

Published Monthly at 470 Fourth Avenue, New York, by Buttenheim-Dix Publishing Corporation. Branch Offices: Daily News Building, Chicago, Tom Dix, President; 642 Hanna Building, Cleveland, George Conover, Manager; 402 Monadnock Building, San Francisco, Calif., Duncan A. Scott, Price 25 cents; \$1 a year. Entered as second-class matter April 1, 1923, at the post office at New York, N. Y., under Act of March 3, 1879.

Printed in U. S. A.

TEEGRID Bridge Floors

(PATENT APPLIED FOR)



TRUSCON

Rapid erection—greater rigidity—no forms required—steel armored wearing surface—cross bars pressure welded to tees with no reduction in area—triangular bars hold concrete positively in place—girders, stringers and Teegrid slab become a homogeneous steel diaphragm to resist distortion stresses.

Write for the Teegrid Handbook.

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO
Sales and Engineering Offices in all Principal Cities



Napier Avenue Bridge, St. Joseph, Mich.
Wisconsin Bridge & Iron Co., Contractors.

BAY CITY
The Machines That
"CAN TAKE IT"

9 TYPES
AND SIZES

$\frac{3}{8}$ -yd.—Part Circle or Full Circle
 $\frac{1}{2}$ -yd.—Standard or Heavy Full Circle
 $\frac{3}{4}$ -yd.—Standard or Heavy Duty
1-yd.—Standard or Heavy Duty
 $1\frac{1}{4}$ -yd.—Standard 3 to
18-Ton Cranes

MODERN DESIGN
Honestly Advertised—Fairly Priced
—FOR 20 YEARS—
Builders of Dependable Shovels—Cranes—Dredges

BAY CITY SHOVELS, Inc.
BAY CITY, MICH.

Hauls
3½ Times
Its Weight
in Dirt



CRESCENT HYDRAULIC SCRAPER

NOW you can own a tractor-operated scraper that is a real excavator. It is built along the same lines as the famous cable-operated Sauerman Crescent Scrapers used by thousands of contractors. It has the power and strength to tackle the toughest digging, coupled with the ease of handling and the large carrying capacity that brings about dirt moving costs of a few cents per yard.

Write for prices and details on scraper to meet your needs, stating size of your tractor.

SAUERMAN BROS.
464 S. Clinton St., Chicago

CONTRACTORS!

GET THE RIGHT MACHINE!

Turn to pages 42, 44 and 45 which contain a carefully compiled list of catalogs and pamphlets describing the most modern and efficient machinery and equipment in use in your field. Write for the catalogs you need to help you land the next bid, through lowered cost because you have the right machine for the job.

THLY

'S

orms
nce—
h no
con-
gers
steel

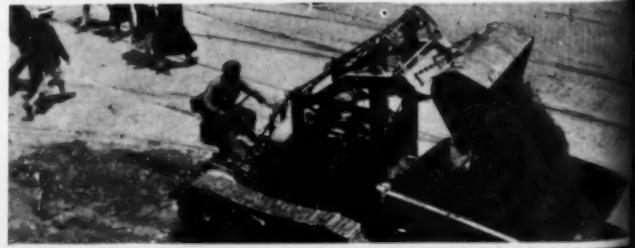
OHIO

es

ed
is
us
rs
as
h-
d-
at
w

lls
ur
ur

S.
re
R



• It does everything but talk . . . and talk doesn't

GET THE JOB DONE » » »

Properly equipped, the modern industrial tractor is the biggest profit maker on a job. • Trackson builds all types of tractor equipment — including industrial crawler tractors, hoists, loaders, shovels, cranes, bulldozers, trench rollers, and crawler wagons — and will welcome the opportunity to show you how the right tractor equipment can reduce your costs. • Specific information regarding any equipment will be sent promptly on request. Write for catalog C-12 to TRACKSON CO., Milwaukee, U. S. A. No obligation.



Industrial Crawler Tractors • Shovels • Loaders • Hoists • Cranes
• Bulldozers • Trench Rollers • Pipe Booms • Crawler Wagons
• Crawler Wheels • Earth Boring Machines • Pole Erectors . . .

TRACKSON

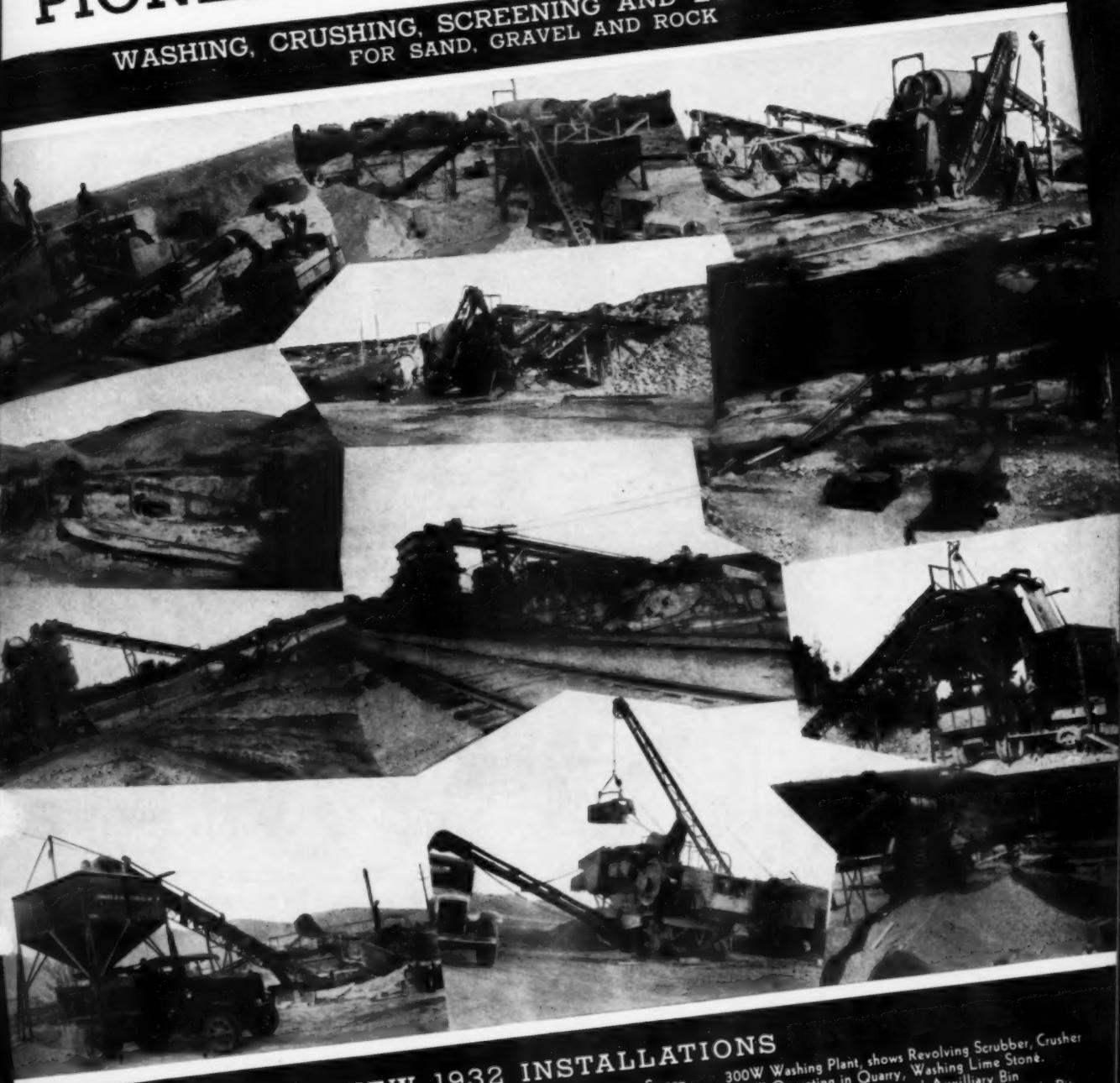
TRACTOR EQUIPMENT

Trailer
300 W
41 W
12 B

IT'S PERFORMANCE THAT COUNTS—THAT IS WHY PIONEER EQUIPMENT LEADS

contents in front

WASHING, CRUSHING, SCREENING AND LOADING PLANTS
FOR SAND, GRAVEL AND ROCK



A FEW 1932 INSTALLATIONS

Trailer Duplex with Shovel Hopper, Mounted Motor.
300W Washing Plant, Producing 4 Sizes of Aggregate
41WS Sand Washing Plant with Shaker Screen
19B Duplex with Roll Crusher for Reduction

305W Sand Washing Plant with Revolving Screen
300W Washing Plant, a Typical Portable Setup
300W Washing Plant, Semi-Portable Setup
No. 12 Trailer Plant—Note Portability of this Plant

300W Washing Plant, shows Revolving Scrubber, Crusher
300W Operating in Quarry, Washing Lime Stone.
41 Screening Plant, with 5 yard Auxiliary Bin
300W Producing Concrete Aggregate at Roadside Pit

Pioneer Gravel Equipment Mfg. Co.
MINNEAPOLIS, MINNESOTA

There is a Dealer

FORWARD IN 1933

Many new and advanced features are combined in the ETNYRE LINE of BITUMINOUS DISTRIBUTORS.

From an economical standpoint, accuracy and efficiency are now, more than ever before, a vital factor in Bituminous Road Construction.

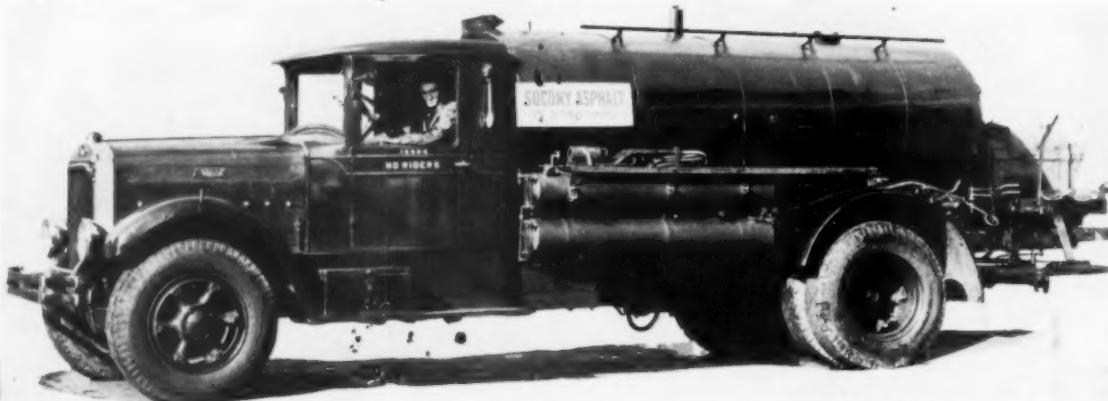
Visit us at the Road Show in Detroit (Jan. 16-20, Booth 309) and obtain detailed specification of the new ETNYRE Models; or write to us for complete information.

ETNYRE

HEAVY
BITUMINOUS



DISTRIBUTORS *Are Better*

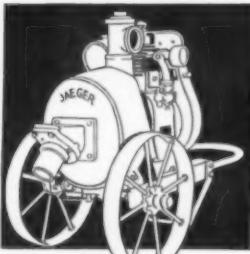


1250-Gallon Model FO2 ETNYRE DISTRIBUTOR. Courtesy Standard Oil Company of New York
Manufactured by E. D. ETNYRE & CO., Oregon, Illinois, U. S. A.

**20,000 GALLONS
PER HOUR**

**JAEGER
3" SELF-PRIME
CENTRIFUGAL**

100% automatic priming at lifts over 25 feet; heads up to 60 feet; 5 h.p. gas or electric power, weight only 400 lbs., Timken equipped. One of a complete line. Get our lower prices.



MIXERS 3½ S to 84S.
HOISTS to 50 h.p.
PLACING EQUIPMENT.

The JAEGER MACHINE Co.
701 Dublin Avenue
Columbus, Ohio



"Only \$3 for all this?"

You'll be surprised, too, when you see how much luxury and convenience you can enjoy at the Hotel Lexington for as little as \$3 a day.

And here's another fact that'll make your expense account beam with gratitude—it costs only \$1 a day more for two persons at the Lexington. A room which is \$3 for one, for instance, is only \$4 for two persons.

HOTEL LEXINGTON

In Grand Central Zone, Lexington Ave. at 48th Street
NEW YORK CITY
CHARLES E. ROCHESTER, General Manager

CONTRACTORS!

GET THE RIGHT MACHINE!

Turn to pages 50, 52 and 54 which contain a carefully compiled list of catalogs and pamphlets describing the most modern and efficient machinery and equipment in use in your field. Write for the catalogs you need to help you land the next bid, through lowered cost because you have the right machine for the job.



ALLIS-CHALMERS TRACTOR MODEL "M"

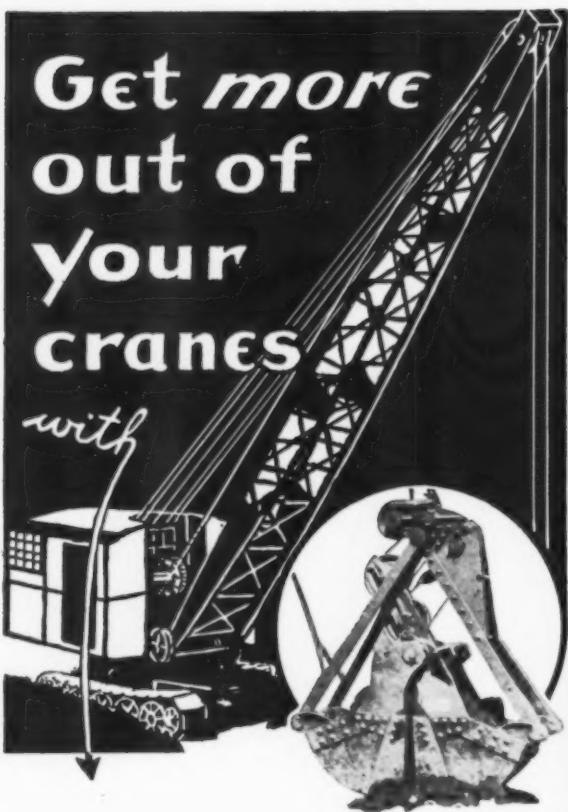
One year ago Allis-Chalmers announced the big Model "L" with its many advancements in track-type tractor design. That was the biggest tractor news of 1932.

Now comes the big news for 1933 in the track-type tractor field — the A-C Model "M"—"the baby of the family", but with the same stamina and durability so outstanding in its big brothers — the "35" and "L". For example —

- Weighing only 6,200 pounds, the "M" delivers approximately 28 horsepower at the drawbar.
- The "M" has four forward speeds, ranging from 2.23 to 5.82 M.P.H.
- Although the most modern track-type tractor on the market, the "M" sells at a record low price for a tractor of this rating.

BRINGS A NEW

ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE, U. S. A.



WILLIAMS FAST-DIGGING BUCKETS

You invest thousands of dollars in a crane, yet the bucket actually does the digging. Don't handicap it with a poor bucket.

The Williams "Champion" bucket will increase the daily output of any crane. The exclusive power-arm combination of lever and block-and-tackle not only gives increased digging power but also unusually quick action because of reduced cable over-haul. Straight cable lead reduces cable wear and replacements.

Try a Williams "Champion" on your own work. Check bucket against bucket under exactly the same working conditions—then you will be convinced that no crane equipment is complete without a Williams bucket. Write us for descriptive bulletin.

Power-Arm, Multiple-Rope, and Dragline Buckets — "Arch-Girder" Trailers

THE WELLMAN ENGINEERING CO.

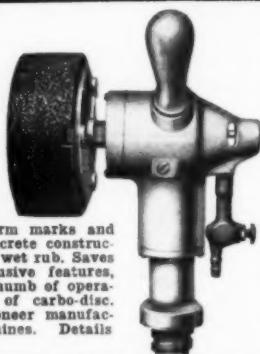
7012 Central Ave.

CLEVELAND, OHIO

Birmingham • New York • Chicago • Detroit • Pittsburgh • Mexico City

New . . .

BERG Water Feed CONCRETE SURFACER



For removing fins, board and form marks and all surface irregularities from concrete construction where specifications call for a wet rub. Saves time, money, labor. Many exclusive features, including water control valve at thumb of operator and water outlet in center of carbo-disc. Made and guaranteed by the pioneer manufacturer of concrete surfacing machines. Details on request—write.

THE CONCRETE SURFACING MACHINERY CO.
1559 Spring Grove Ave., Cincinnati, Ohio

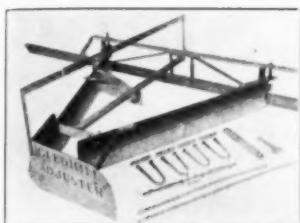
LET THE
GENERAL
AND HIS STAFF
SHOVEL - DRAGLINE - PULLSHOVEL - CLAMSHELL - CRANE - SKINNER
make your **SPRING DRIVE** *success*,
The BIG MACHINE! of its class.
Speed? Yardage? Service? Yes! and plenty of it.
Write for further information or a demonstration.
Distributors in principal cities
THE GENERAL EXCAVATOR COMPANY
MARION, OHIO, U.S.A.

Announcing * * * * * STATION
BARITONE RADIO
IN EVERY GUEST ROOM
HOTEL **SEVERIN**
for your greater
Pleasure & Comfort
AND
REDUCED RATES
SINGLE
Including Individual
TUB OR SHOWER
\$2.50 \$3.00
NO HIGHER

Enjoy the comforts and the luxury of
the finest hotel in Indianapolis at the
cost of ordinary accommodations.

W. H. WELLS ... MANAGER

INDIANAPOLIS



The GLEDHILL Road Adjuster

levels Black-Top perfectly, makes true, uniform berms, adjusts roads level or to any desired crown, better and at lower cost. Can be attached to your grader in a few minutes, or supplied on its own chassis. Write for literature. Distributors wanted.

THE GLEDHILL ROAD MACHINERY CO.
GALION, OHIO U. S. A.

PORTABLE ASPHALT PLANTS ROAD TYPE

THREE SIZES FOR
HOT OR COLD MIX

Accurate control of materials to comply with any standard specifications for bituminous mixtures.

Send for Bulletin P.456

ETHERINGTON & BERNER INC.
Engineers - Manufacturers
INDIANAPOLIS, INDIANA

CONSTRUCTION EQUIPMENT

Pile Hammers	Whirlers
Pile Extractors	Cableways
Hoists	Bridge-operating
Derricks	Machinery

Write for descriptive catalogs.

McKERNAN-TERRY CORPORATION
19 Park Row, New York
Distributors in Principal Cities



**LAMBERT-NATIONAL HOISTS: STEELE & CONDUIT MACHINERY,
McKERNAN-TERRY DOUBLE ACTING
PILE HAMMERS**

FREE FOR THE ASKING!

Check over the enclosed list of catalogs and pamphlets on pages 50, 52 and 54. These describe the latest improvements in machinery and equipment used by contractors throughout the United States.

Do you mention CONTRACTORS AND ENGINEERS MONTHLY when writing? Please do.



List
Price
\$8.50

DIETZ "Economy" FLOODLIGHT

*The
Light
of a
Hundred
Uses.*

At low cost an equipment of Dietz Economy Floodlights will solve your problem of lighting for emergency night work on sewers, water mains, highways, or around buildings.

The same high standards of quality and durability which characterize other Dietz lighting devices are built into this Floodlight. It sheds a powerful, wide angle light and is fitted with a hyperbolic reflector, chromium plated, and a 100-watt, 115-volt bulb (user can substitute a 32-volt or 220-volt bulb if desired). The body is of steel, black enameled, with cadmium plated door rim, base and mounting nuts. It is waterproof and weatherproof.

Order through your Supply Dealer.
Circular sent on request.

**R. E. DIETZ COMPANY
NEW YORK**

*Makers of Lanterns for the World
FOUNDED 1840*



INDIANA Leads all States in Miles of Paved Roads



1932 State Highway System of
INDIANA

HARRY G. LESLIE, Governor

Indiana State Highway Commission

Albert J. Wedeking, Chairman Robert B. Boren, Vice-Chairman
Arthur P. Melton Arthur H. Sapp J. J. Brown, Director

A complete highway system . . . with a large percentage of low cost bituminous roads . . . resulting in a low average cost per mile

THE State and County Highway Departments deserve much credit for these roads which are advantageously located and well maintained with a low bonded indebtedness.

This system provides all year around transportation for rural and city traffic and an exceptionally low cost of U. S. postal and parcel delivery.

Many hundreds of miles of these roads were constructed with Standard Asphalt Road Oil and Stanolind Cut Back Asphalt.

Roads constructed with Standard Asphalt Road Oil and Stanolind Cut Back Asphalt can be built not only at a low cost, but because of their durability and resistance to traffic wear, can be maintained at a very small expense.

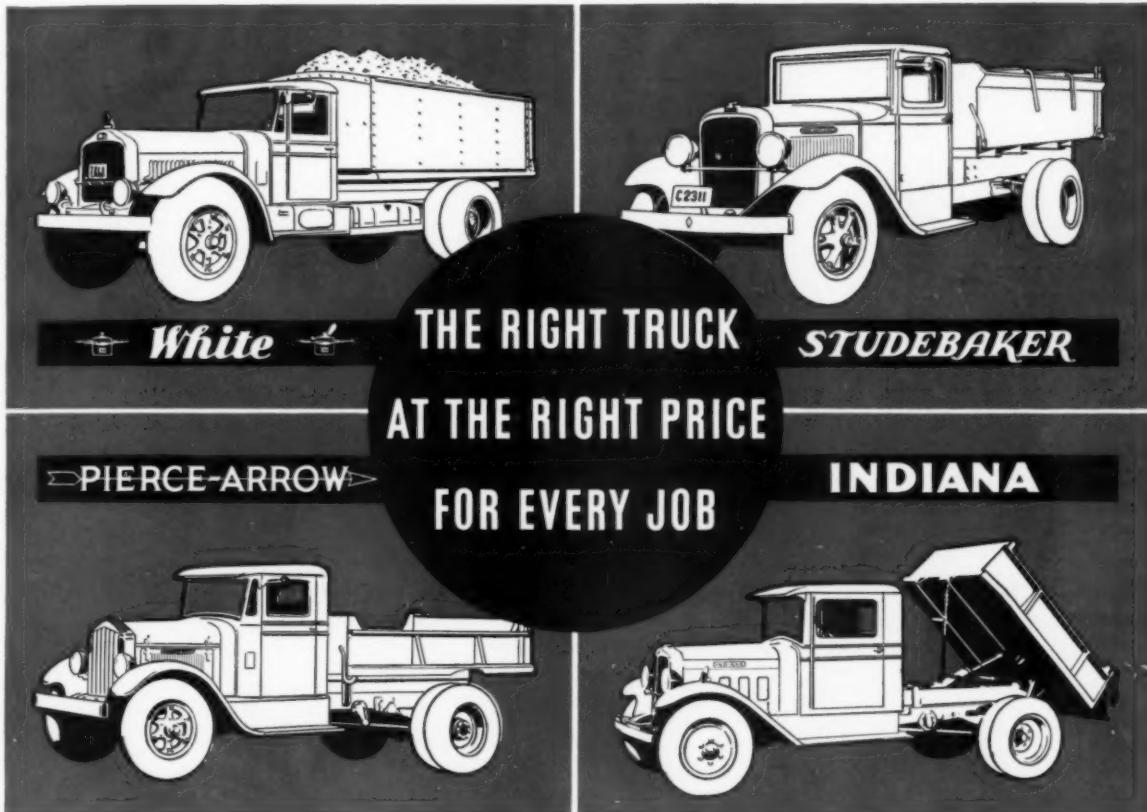
STANDARD OIL COMPANY
(Indiana) 118
910 South Michigan Avenue Chicago, Illinois



Please mention CONTRACTORS AND ENGINEERS MONTHLY—it helps.

Four Great Names

NOW UNDER A SINGLE BANNER



*See the exhibit of these four famous lines
at the Road Show*

Four great names, pioneers in the truck industry, are now under a single banner. To the truck buyer in every field this brings the most complete range of models and prices backed by a combined reputation for performance and value without equal in the industry.

The vast network of White Factory Branches and Studebaker Dealers puts world wide

service facilities back of these four great lines of trucks.

The combined engineering and manufacturing experience of these leaders makes it possible to offer the exact truck for every particular requirement—the most transportation for your dollar. See the world's greatest line of trucks before you buy.

NOW SOLD AND SERVICED BY WHITE FACTORY BRANCHES

Do you mention CONTRACTORS AND ENGINEERS MONTHLY when writing? Please do.

How many roads do you know that will last as long as this Culvert? . . .

HOW many roads do you know that have been in service, without resurfacing, regrading, or rebuilding, for ten, fifteen, or twenty years? Not many, we'll wager.

Yet there are Culvert installations of GOHI Corrugated Pipe more than twenty years old that have not cost one cent for repairs. They haven't shouted about it. They haven't made a lot of noise. But they're still there, after the original road has been torn up and a new one built in its place. How much longer they'll last no one knows.

GOHI Corrugated Pipe is made from 99.90% Pure Iron-Copper Alloy. It has the resistance to smile at the corrosive action of soil, water, and weather; the flexibility to resist the pounding action of heavy traffic, the pressure of settling fills and freezing water; the ease of installation that eliminates traffic tie-ups, delays, special equipment, and costly labor; and the durability that gives low cost per year service — all of which combine to help lower taxes, the big demand of your public today. Write the nearest GOHI Fabricator for full information.



(Meet copper-bearing pure iron requirements in all accepted specifications for corrugated metal culverts.)

GOHI PRONOUNCED "GO-HIGH" Corrugated PIPE

FOR ALL DRAINAGE PURPOSES

GOHI CULVERT MANUFACTURERS, Inc., Newport, Kentucky

BANCROFT & MARTIN ROLLING MILLS CO., S. Portland, Me.
NEW ENGLAND BOLT CO., Everett, Mass.
DENVER STEEL & IRON WORKS CO., Denver, Colo.
A. N. EATON, METAL PRODUCTS, Omaha, Nebr.
FERNAUGHTY MACHINERY CO., Portland, Oregon
TENNISON BROTHERS, Texarkana, Ark.

CENTRAL CULVERT CO., Ottumwa, Iowa
ROANOKE SALES CORP., Roanoke, Va.
ST. PAUL CORRUGATING CO., St. Paul, Minn.
CAPITAL CITY CULVERT CO., Madison, Wis.
A. N. EATON, METAL PRODUCTS, Billings, Mont.
THE NEWPORT CULVERT CO., Newport, Ky.

Do you mention CONTRACTORS AND ENGINEERS MONTHLY when writing? Please do.



WILLIAMSPORT WIRE ROPE

Williamsport Wire Rope has the stamina to undergo severe stress and with proper care will generally render an unusual service—noticeably longer and noticeably more satisfactory.

No other rope, regardless of construction or price, is or can be made uniformly better. If you pay more money for any wire rope than Williamsport asks—you're just wasting money and we can prove it. Remember this—when ever a wire breaks in a cable the factor of safety reduces just that much and a broken wire on a peppy Williamsport Cable is instantly noticeable—a mighty good warning sign to have!

Write us for further comparative facts.

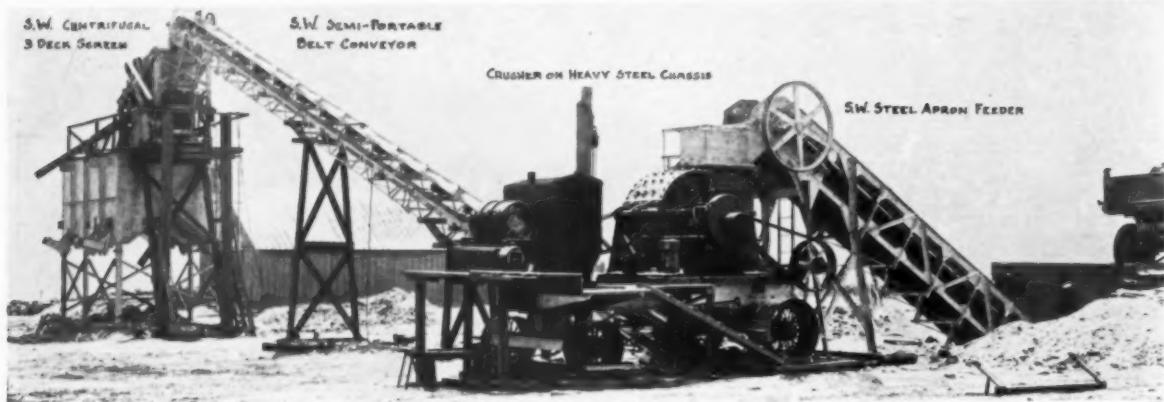
WILLIAMSPORT WIRE ROPE COMPANY

Main Office and Works

WILLIAMSPORT, PA.

General Sales Offices

PEOPLES GAS BLDG., CHICAGO



A complete unloading, storage and batch checking plant designed and built for a New York road contractor.



An installation of a Monarch Continuous Bucket Stone Elevator and a totally enclosed Cement Elevator in a central concrete mixing plant.

Opposite: A Monarch Vertical Screw Elevator unloading bulk cement from hopper-bottomed cars.



Sprout-Waldron CONTRACTORS' EQUIPMENT

Lower costs, uninterrupted operation and more profits are the things that you look forward to when buying equipment.

**Portable Crushing Plants
Bulk Cement Handling Equipment
Bucket Elevators
Belt Conveyors
Vibrating Screens
Sand Washers
Central Mixing Plants
Screw Conveyors
Apron Feeders, Take-Ups
Bin Gates, Chutes
Bearings, Pulleys, etc.**

As built by Sprout, Waldron, will give you the utmost in service at lowest cost, because they are built to high quality standard; are rugged in design and engineered to meet specifications.

Complete responsibility for designing and equipping plants are accepted by Sprout, Waldron or contracts for alterations or adding to present equipment, whether the job be large or small, will be given our most careful attention. Get a Sprout, Waldron estimate.

Literature on request.

SPROUT, WALDRON & CO., INC.
1260 Sherman Street
MUNCY, PA.

Construction in 1933—

What Are Its Prospects?

TAKEN as a whole, 1932 was a disappointing year. The promise it held for an increase in work was shattered by the smallness of the contracts actually awarded. Engineering construction was to have been the main industry on which the country could rely in meeting the depression. Business was to have been primed and unemployment relieved by undertaking a huge new building program. The Reconstruction Finance Corp. was allotted \$1,500,000,000 to be loaned for self-liquidating projects. The states and the cities were expected to join in and swell this large total. But the result was far different.

Estimated figures for contracts awarded show that there was a decline of approximately 25 per cent from the level of 1931. When the final total has eventually been obtained and entered on the record it will probably be found that instead of 1932 being a banner construction year, it was the poorest since 1922. All things considered, this is not a severe decline; other industries have suffered far more. And other industries have far less basis for an optimistic outlook for 1933. Construction remains the sole big industry capable of lifting us from the depression and the prospect for financing, both private and governmental, is much better for the coming twelve months than it was for those that have just passed.

One of the reasons for disappointment was the delay in the self-liquidating project scheme. The American Society of Civil Engineers estimated that there was some \$1,400,000,000 of such work awaiting financing but by the end of the year the R. F. C. had authorized loans of less than 15 per cent of this total. Further, of the loans authorized all but a very few were held up either by law suits or the necessity of obtaining additional local legislation. As a result contracts were let on only one or two of the smaller projects and the awards had very little influence on the 1932 figures. Many of the difficulties will be cleared away during the coming year and in addition it is expected that a large number of new loans will be authorized. Thus, contracts from this source should continue in large volume throughout 1933.

Much R. F. C. Work

Near

Contract Letting

Stage

By

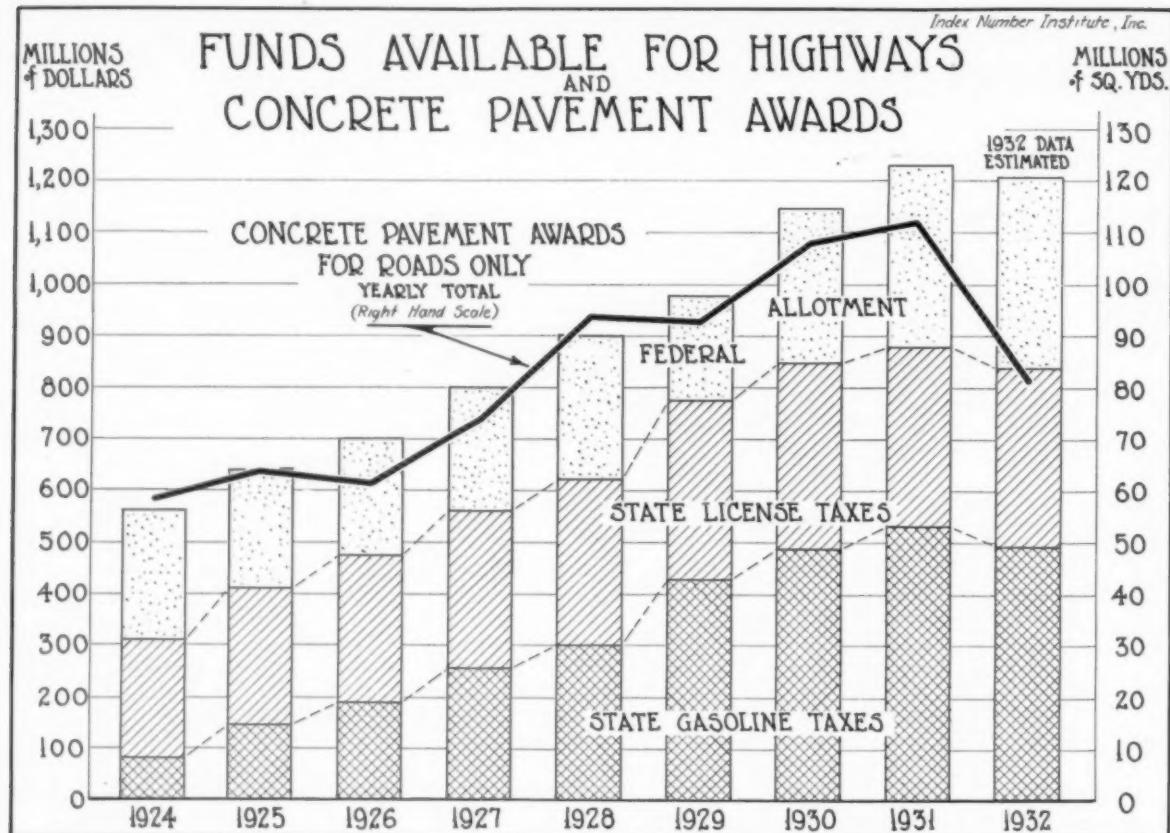
John A. Moffitt

Index Number Institute

HIGHWAYS

Highway construction, although not considered a self-liquidating project by the government, was given an additional \$120,000,000 under the Federal Emergency Relief and Construction Act. This sum, which was quickly drawn upon by the states, when added to the regular Federal Aid, made a total that was larger than that of 1931. The income received from state gasoline taxes held up fairly well in the first half of the year, but fell rapidly thereafter. The estimate shown on the chart, which necessarily was based upon early data, may therefore be too high. State license taxes were only slightly below 1931 and the sum of these made the total funds available for highways not much less than the preceding year.

The amount of contracts let for highway construction, however, has been very considerably less. The reason for this is that the states, in many instances, have endeavored to use the funds more for relief than for construction. Therefore, a larger percentage of the money has gone toward maintenance than heretofore since more men could be employed in that work. Also, there



has been a steady diversion of funds, particularly gas taxes, for relief and other purposes so that the actual amount available for construction was considerably less than the theoretical total. The result of these influences is found in the sharp decrease in volume of concrete pavement awards which declined from a high point of 111,852,000 square yards in 1931 to an estimated figure of 81,543,000 in 1932.

So far as can be seen the total of road building is more likely to decrease than increase during 1933. Early reports indicate much lower license fees for next year and gasoline taxes will probably continue to move downward. Federal appropriations point to a smaller rather than a greater amount of Federal Aid although many believe there will be another emergency grant. There is also the possibility that the need for relief funds during the coming year may cause additional states to dip into the amounts that should be allocated to highways. It would seem that some of our surplus labor could be put to excellent use in building the many new roads required by present traffic conditions, as well as for maintenance work, but it must be admitted that the picture appears much brighter in other fields of construction engineering.

BRIDGES

The outlook for bridge building, for example, seems excellent, despite the fact that the total contracts in 1932 were some 40 per cent below those in 1931. The low level of bridge building may be judged by the fact

that almost a third of the contracts awarded last year came through the lettings of some \$23,289,000 by the Golden Gate Bridge in San Francisco in November. Several other bridge projects are now very near the contract-letting stage and the amounts involved are quite large.

The biggest single job now in view is the San Francisco Bay bridge which is to be erected by the California Toll Bridge Authority. Financing has been approved by the Reconstruction Finance Corp. and some work awarded. Additional state legislation with respect to approaches is required before the way is cleared for the complete job and enactment is expected when the legislature meets next Spring. The New York State Bridge Authority's plan for a bridge over the Hudson at Catskill has been authorized a loan by the R. F. C., conditional upon the enactment by the State Legislature of an amendment to the statute authorizing construction. Little difficulty is anticipated in obtaining this change soon after the first of the year. The New Orleans Public Belt Line Bridge is being delayed by difficulties in getting leasing contracts signed, but Reconstruction funds will be available as soon as this problem is ironed out. The Tampa-Clearwater Bridge will also be under construction soon after January first.

The attitude taken by the McKee Administration in the City of New York halted plans to recommence construction on the Triborough Bridge connecting Queens, Manhattan and the Bronx. Whether this attitude will be changed under the O'Brien administration after Jan-

uary 1 is not yet known. R. F. C. financing undoubtedly could be obtained and work on this bridge would certainly aid New York's relief problem. There are a number of other bridge projects, some of them only slightly smaller than those enumerated above, on which contracts may be awarded during the coming twelve months and it seems certain that the total will be well above 1932 and, possibly, even above 1931.

SEWERS

Contracts awarded for the construction of sewers has been steadily decreasing for a number of years. Figures for 1932 indicate that just slightly over a third as much work was let in that year as in 1931 and less than a quarter as much as in 1927. But there is a good prospect that this down trend will be turned upward in 1933. The R. F. C. has recognized that sewers are a self-liquidating project and many cities find that they have a definite need for additional service. Minneapolis, Atlanta and Cleveland have planned some of the largest plants with costs running \$15,000,000, \$14,000,000 and \$11,000,000, respectively, and a number of other cities have additional projects that would add considerably to the total.

There is also a growing demand for sewage disposal plants and there are good possibilities for a large amount of this type of construction during the coming year. The sewage disposal system for Chicago, yet to be completed, has an estimated cost of \$50,000,000, while in New York it will run at least \$30,000,000. Cer-

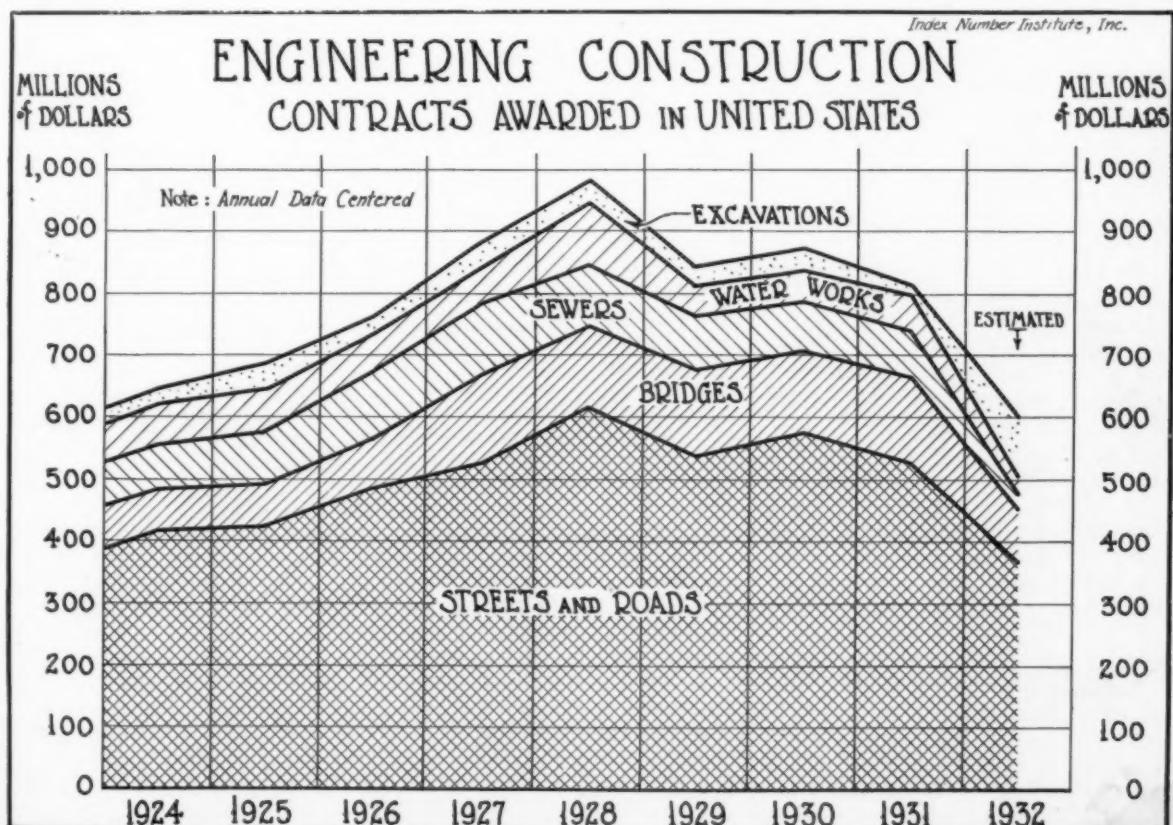
tain of the smaller cities that heretofore have been allowing their sewage to flow into lakes and rivers will find it necessary to erect disposal works in the near future in order to abide by newly-enacted anti-pollution laws.

Somewhat similar are the garbage disposal plants now being erected or planned by several municipalities. Perhaps the largest system and the one that is receiving the most immediate attention is that in New York City where the cost has been estimated at \$12,600,000. Altogether there is enough work in this field to bring the figures for next year well above 1932, even if only a small proportion of the total were actually awarded.

WATERWORKS

The Reconstruction Finance Corp. has found that water works offer one of the best sources for loans for self-liquidating projects. The first R. F. C. loan was made to the Metropolitan Water District of Southern California which will bring Colorado River water to Los Angeles and fourteen adjacent cities. Work was held up for a time by a taxpayer injunction suit, but this has recently been dismissed and contract awards are expected in the near future. Wilmette, Ill., has already let its contracts, the Seattle, Wash., water supply system awards are expected soon after January 1 and there are a number of other smaller projects that are almost ready for bids.

In addition, loans have been authorized for several projects where contracts have been held up by law suits.



Even in these cases little appreciable delay is anticipated. Nor has the R. F. C. already made loans on all the projects which might qualify. There are, for example, the Delaware River Supply System of New York City with an estimated cost of \$59,000,000 and the Brooklyn water tunnel and the New York water main enlargement plans which combined would cost nearly \$100,000,000. Cleveland, Akron, Rochester and many other cities are also seeking improved facilities. Thus, although water works contracts in 1932 were but half of the 1931 total, a new high record may be expected during 1933. The loans so far authorized would seem to assure that.

EXCAVATION AND EARTHWORKS

Contracts for excavation work showed a marked increase in mid-year which brought the total lettings for 1932 to a higher figure than those of 1931 or of any recent year. This was mainly the result of the government placing its contract work for levee and flood control along the Mississippi River. There was also some increase in the volume done around the Great Lakes, but the total in that area remained below normal. It would appear that 1933 will be a prosperous year for the companies engaged in this type of construction, as many of them, particularly those working on the Mississippi River, have already obtained contracts that will keep them busy throughout the coming twelve months.

The Middle Rio Grande Conservancy District, which received a loan from the R. F. C., placed some of its contracts and commenced work just before the end of the year and it is quite likely that several other similar projects will receive Reconstruction financing. An application has been made for the \$15,000,000 irrigation project on the Verde River, north of Phoenix, Ariz., and Los Angeles County is understood to be moving ahead with San Gabriel Canyon job. Other probable contracts are the Yakima River development and the Lake Okeechobee flood control. Advance planning by the Department of the Interior also indicates that there will be increased funds available for reclamation projects.

The outlook for tunnel construction is promising, despite the fact that the attitude now taken by the city of New York will apparently postpone for some time the construction of the mid-town tunnel by the Port Authority. This is perhaps the biggest individual tunnel job on which engineering has been completed, but there are a number of others which may be moved forward during the coming year if loans are provided by the R. F. C. Important among these is the Norfolk-Portsmouth Vehicular Tunnel and the Philadelphia subway. There is also a possibility that the Staten Island subway, a \$40,000,000 project running under the Narrows and through Brooklyn, may be financed during the coming year.

RECONSTRUCTION APPLICATIONS

As it seems probable that the Reconstruction projects will furnish a very large proportion of next year's construction, much will depend upon the kind and type of work that will be approved by the Corporation. The applications received and graded by the Engineers' Advisory Board give some indication of what may be expected. Class I applications are final and supported by

complete data. They represent a wide range of activity and include many small loans. Class II applications are incomplete and informal, while those in Class III are accompanied by little or no data. Applications in the second and third classes are moved up to the first class as soon as the needed information is furnished and engineers are constantly at work to make the data adequate for the Board to render its decision.

R. F. C. ENGINEERS' ADVISORY BOARD
Loan Applications Received to November, 1932

	1st Class No. Amount	2nd Class No. Amount	3rd Class No. Amount
Water Supply.....	30 \$ 3,009,120	16 \$ 20,484,000	30 \$ 36,439,257
Bridges.....	11 34,725,533	4 3,380,564	13 93,051,000
Irrigation.....	5 31,963,000	7 2,523,956	9 18,279,000
Power Plants.....	5 6,859,000	5 32,670,000	4 980,000
Sewers.....	3 36,580,000	.....	4 1,695,000
Terminals.....	2 350,000	.....	2 1,000,000
Docks.....	2 675,000	1 75,000	.....
Housing.....	3 5,695,000	5 47,418,000	4 30,700,000
Markets.....	1 1,500,000	.....	3 4,320,000
Airports.....	1 4,100,000	1 7,000,000	.....
Tunnel.....	.....	1 75,000,000	2 38,440,000
Ship Canal.....	1 40,000	2 500,000	1 160,000,000
Miscellaneous.....	.....	.....	3 218,000
	64 \$125,796,643	42 \$189,051,520	87 \$385,522,257

While all these applications will not be passed, there will undoubtedly be enough that can meet all the tests to assure the construction industry a good year for 1933.

Wide Variety of Drilling Operations on Memorial Highway

THE World War Veterans' Memorial Highway near the town of Wilmington, N. Y., 11 miles from Lake Placid, is being rapidly pushed to completion. The road will have a minimum width of 30 feet and an average grade of 9 per cent. Its base is of solid granite from the mountainside and rock fill supported by retaining walls built of blocks of stone removed from the right of way in excavating. The final surface will be waterbound macadam. The drilling operations involve sinking, pop-holing, drifting, or "snake-holing", and some holes which are so elevated that they might be referred to as stoping. The Williamson-Howard Construction Co. of Youngstown, Ohio, contractor for this job, is using Cleveland H17 drills for sinking and pop-holing and a D9 drifter for flat and angular holes. The stope holes are drilled parallel to the natural lines of cleavage of the granite, loaded and shot in such a way as to lift the stone with comparatively little shattering so that the blocks may be used for construction of the retaining walls. It is expected that the road will be dedicated and open to the public in August, 1933.



A
Stoping
Operation
on the
World War
Veterans'
Memorial
Highway



Nello L. Teer, Durham, N. C.

Completed Heavy Grading

and Top Soiling

Between Christmas

and the Fourth of July

HOW many men do you use in dressing the slope of earth cuts? Even before the days when it was fashionable for a contractor to use a large number of local unemployed men for unskilled labor we have seen a dozen or so men with picks and shovels trimming or dressing slopes. Nello L. Teer does not find a labor organization of this size necessary but handles it all with the shovel, the pit men doing such hand work as is necessary. On the 5.02-mile "gravel" road job which this contractor built west of Richmond between December 21, 1931 and June 13, 1932 there were a number of cuts running up to 17 feet in depth and as much as 500 feet long with 1 to 1 slope. In a few cases these were laid back to 2 to 1 slopes for borrow where there were heavy fills adjacent. On every one of these cuts the shovel operator trimmed the slope very close to the required grade and the pit men, who also handled the oiling of the Lorain 75-B, did the small amount of hand trimming necessary to remove inequalities in the slope.

The cuts ran from 2 to 17 feet in depth and usually the cut and fill balanced within 1,200 feet but on one section the haul to the fill ran close to 2,000 feet with

Economies

on a

5-Mile

Top Soil

Road

no overhaul allowed. The 1931 specifications called for 1,000 feet of free haul plus overhaul but in 1932 all overhaul was eliminated. The new "gravel" top soil road was built to a width of 20 feet with 5-foot shoulders on fill and 6-foot shoulders on cut. On this was placed the top material classified as gravel to a loose depth of 14 inches and compacted to 10 inches. All of the fills were placed in 12-inch layers and rolled with a Euclid sheepsfoot roller pulled by a Caterpillar Thirty.

The contractor handled all of his clearing and grubbing on the gravel pit as well as the right-of-way, averaging about twelve men for this work. About 1,000 yards of rock cut was encountered on one point on the job, all of which was drilled with an Ingersoll-Rand 110-foot portable compressor and jack hammers with the drill holes running to a maximum of 10 feet. The rock was blasted with du Pont 40 per cent dynamite. In contrast to the rock section was one 4-foot muck hole which was excavated to 3 feet below grade and backfilled with the rock from the ledge. Fortunately it was within an economical hauling distance so that the ledge provided an "assist."

The excavation was handled by a fleet of three Biehl 12-yard wagons equipped with 15-ton Euclid crawler-type tracks. Another economy in organization was the use of only two winders who stayed at the dump instead of a winder and tractor operator for each unit.

THE "GRAVEL" PIT

The "gravel" for topping this job was secured from pits near the right-of-way. The hauls from these pits ran from $\frac{3}{4}$ -mile to $1\frac{1}{4}$ miles. All gravel hauling was done by the City Transfer Co. of Durham, N. C.



Loading the Gravel Trucks

using five Corbett 2-ton trucks with Firestone dual pneumatic equipment. When the haul was longer these trucks were supplemented with a few local trucks. The trucks dumped the top material on the road in piles. It was spread with a Caterpillar Sixty and LaPlant-Choate bulldozer and trimmed with a Galion 14-foot grader pulled by the Sixty. Work progressed so rapidly on this project that it was possible for the contractor to assist in completing the fill on the next section of the project where the contractor had been delayed in completing the work.

PERSONNEL

Nello L. Teer, Durham, N. C. was the contractor for this 5.02-mile "gravel" road project with R. E. Scroggs as Superintendent. F. L. Ward was in charge of the gravel hauling for the City Transfer Co., Durham, N. C. For the Virginia Department of Highways C. W. Staggs was Resident Engineer.

Power Shovels Eighty Years Ago

RECENTLY a copy of the original drawing illustrated was discovered. It shows a "Land Excavator, Proprietor and Builder, J. C. Osgood—1852." J. C. Osgood, founder of The Osgood Co. now located in Marion, Ohio, would be astonished could he see the modern gasoline, electric, steam and diesel power excavators working today. The early design shown was for a "two-horsepower" railroad-type shovel. The power was taken through gears from the forward roller shaft on the treadmill of the two horses to the countershaft. Two pinions were loose mounted on the counter-shaft and engaged by sliding jaw clutches. The pinions engaged the gears on the drum shaft to furnish power for hoisting.

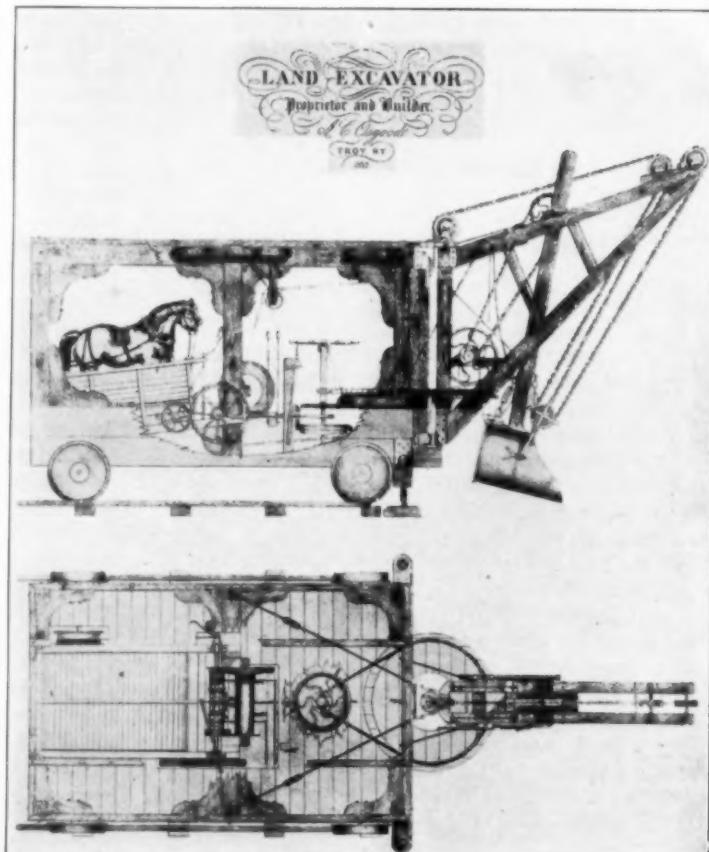
Two sliding bevel gears operated by hand levers were also mounted on the countershaft. These could be moved into mesh with a bevel gear on a longitudinal shaft to swing the boom in either direction. The longitudinal shaft had a bevel gear on the forward end which meshed with a bevel gear on the vertical

shaft. The chain operating from the chain sprocket on the vertical shaft moved the swinging circle in either direction depending upon which of the bevel gears on the countershaft had been engaged with the bevel gear on the longitudinal shaft. A hand wheel was mounted at the top of the vertical shaft so that the machine could be swung by hand when the bevel gears were not engaged.

A winch head was mounted on the left end of the countershaft and used to furnish travel power. A rope was anchored to the drum on the rear axle, wrapped around the drum several times and the free end wrapped around the winch head. Then, by having the horses operate the countershaft, the rope was unwrapped from the axle drum and wrapped on the winch head turning the drum and causing the machine to travel forward or backwards, depending upon the way the rope had been wrapped.

Crowding was just as important in 1852 as it is today but in those days they did not have the tremendous crowding power and precision control that is available on modern equipment. This eighty year old design shows a chain crowd operated by hand power through a hand wheel.

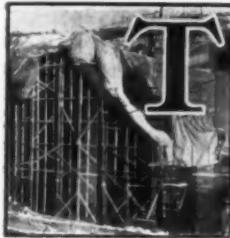
We take our modern ingenious power excavators very much for granted but if we look back eighty years to this real innovation in shovel design we will realize that much credit is due to the designer of this machine for the novelty he introduced, but very probably he was laughed at by the same type of honest citizen who was vastly amused by the first automobile and the first airplane. It is interesting to note that the "power" shovel really antedated the steam shovel which now is largely replaced by the modern gasoline and diesel "power" shovel.



Reproduction of an Original Drawing of a 2-Horsepower Excavator of 1852

Winter Construction

Part IV—Handling and Heating of Aggregate



THE first essential in handling aggregates for use in winter construction is the prevention of freezing, as frozen gravel or sand is exceedingly difficult to thaw. In ordering sand and gravel from a producer, contractors should stipulate that no wet sand or wet gravel shall be shipped in freezing weather. Most producers today, however, store sand and gravel for winter construction under cover so that it drains sufficiently to prevent its freezing into a mass during shipment. Further, many railroads now refuse to accept a shipment of wet aggregate in freezing weather. Should one or more carloads be received in frozen condition, probe pipes with live steam is about the most effective way to thaw it for they will quickly work a hole into the mass and then heat up the aggregate, its handling during the winter is practically the same as under normal weather conditions. Cranes, belt unloaders and conveyors, and trucking to stockpiles are used. A study of reports which have been received from a large number of contractors shows that apparently more aggregate is handled by wheelbarrows on winter work than is customary during the summer. This is probably due to the fact that the volume of concrete being placed does not warrant the installation of costly machinery.

HEATING OF AGGREGATES

Usually the simple addition of hot water to the mix is not sufficient to produce a concrete which will retain a sufficiently high temperature in the forms to insure it against freezing. Most jobs provide means for heating

A Symposium Covering Expense,

Excavation and Grading,

Steel Construction,

Handling and Heating of

Aggregate

and Protection of

Concrete

aggregate in the stockpile or bin. Among the more prominent methods mentioned in the reports which we have received are the use of a coil of steam pipe inside the batching bins, grillages of pipe at the bottom of stockpiles, pipe probes worked into the stockpiles to apply live steam and the use of heavy tarpaulins over the top of the stockpiles to retain heat applied by these or other methods. Probably the most general method of heating aggregate is piling it over a section of corrugated culvert pipe and maintaining a fire within the pipe. A vertical smoke stack or chimney may be placed in the end of the pipe, but usually some sort of a sheet metal baffle at the end serves to regulate the draft for the fire. Old smoke stacks have many times served as heaters instead of culvert pipes. Many contractors use an oil burner in the mixer which either heats the aggregate there or maintains the high temperature of the aggregates which have been previously heated in some other manner. One New York State contractor working on a Normal School building used a truck to haul all aggregates to a large heated storage shed where they were kept for at least 24 hours before using.

HEATING THE MIXING WATER

Even though aggregate may not be heated in cold weather prior to its entering into the mixer, it is invariably the case that the mixing water is brought to a high temperature, usually close to the boiling point. This is accomplished either by heating the water with steam direct from a boiler or drawing from a tank in which the water is kept at a high temperature by an open steam jet. The use of Aeroil and Hauck oil

torches is mentioned quite frequently in the reports which have been received, as a means of maintaining the high temperature of aggregate and mixing water during the time they are revolving in the mixer. Mention is also made of canvas flaps over the opening to the mixers to prevent cold winds blowing through and chilling the mix.

ACCELERATORS

The recommendations of various committees and the Portland Cement Association that reliance be placed on heating aggregate and mixing water and proper protection of the concrete during winter construction rather than on accelerators seems to be generally accepted. In about one-tenth of the reports received mention is made of the use of calcium chloride as an accelerator and in one instance an additional amount of cement was used.

PROTECTION OF CONCRETE AFTER POURING

For periods of two to five days after concrete is poured at temperatures below 40 degrees, the mass must be kept in a humid atmosphere at a temperature of approximately 60 degrees to insure proper curing and the full designed strength. In placing, the concrete is exposed to low temperatures for the shortest space of time possible between its delivery from the mixer to a buggy, wheelbarrow or chute. After placing, the concrete is usually protected with a canvas housing, and heat from coke or oil burning salamanders, and in many instances steam, in piping is carried around the structure and the top of the concrete is protected with straw. The steam pipes are either perforated or the joints are not made up tight, thus permitting a considerable volume of steam to escape into the space between the canvas or tarpaulin housing and the forms.

An Illinois contractor reports the use of Sisalkraft paper instead of tarpaulins for the enclosure. He used salamanders beneath any slabs. A Kentucky contractor reporting on a wall bearing building with concrete floor slabs states that the slab was protected by enclosing the lower story and using salamanders beneath the slab as poured. Straw and tarpaulins were placed on top of the slab. Temperature readings were taken every hour

and a minimum reading of 60 degrees Fahrenheit maintained for four days after the pouring. The forms were stripped in 21 days. A Michigan contractor reports the use of tarpaulins on top of the slab supported about 6 inches above the slab so as to leave an air space through which the heated air could circulate. Salamanders were placed below the slabs to furnish heat. One Missouri contractor working in both Missouri and Oklahoma protects the concrete by covering with paper and uses a number of lanterns below the slab to furnish heat.

(To be continued in the February issue)

A Study of the Embrittlement of Hot-Galvanized Structural Steel

THIS study of the embrittlement of hot-galvanized structural steel came about in response to a request to the American Society of Testing Materials for material on this subject which is of concern to transmission tower engineers and consumers and producers of hot-galvanized steel products. Battelle Memorial Institute was engaged to carry on this research under the general direction of a special subcommittee of A. S. T. M. Committee A-5 on Corrosion of Iron and Steel. The present publication issued by the A. S. T. M. comprises the official report of the investigation by Battelle in the form of a technical paper of 83 pages by Samuel Epstein, and the 1932 report of the subcommittee in charge, including a recommended practice for safeguarding against embrittlement of hot-galvanized structural steel products and procedure for detecting embrittlement.

Copies of this publication, bound in heavy paper cover, comprising 109 pages and illustrated, may be secured from the American Society for Testing Materials, 1315 Spruce St., Philadelphia, Penna., at a price of \$1.00 per copy.

Decrease in Blasting Cap Accidents

THE Institute of Makers of Explosives reports that during the first six months of 1932 there was a decrease of 53½ per cent in blasting cap accidents to children as compared with the number reported during the same period of 1931. In the hopes of still further reducing the accidents, the Institute has enlisted the support of superintendents of public instruction in various states; Boy Scouts and Girl Scouts, the Department of Agriculture, the Bureau of Mines and the safety organizations of various states. A special plea is made to all users of explosives to see that blasting caps are kept out of the reach of children.



A Steel Viaduct in Eastern New York, the Major Portion of Which Was Built During the Winter

Motor Trucks Haul Material

for

Rock Fill Dam



Dumping a Large Boulder

ON the San Gabriel Dam project located in the San Gabriel canyon some 30 miles from the city of Los Angeles, motor trucks are playing a very interesting part in handling the 1,200,000 cubic feet of metamorphic rock. This dam is one of two being constructed by the Los Angeles County Flood Control District and is of unique construction because it is being built entirely of rock fill with a concrete slab facing. The rock fill consists of all sizes of rock from quarry chips to single pieces weighing over 25 tons and all of it is being hauled by motor trucks.

The quarry is located 2 miles upstream from the dam site and, owing to the narrow canyon, it was necessary to build a new road in the side of the canyon between the quarry and the dam site. The road in itself holds the key to successful operation on this kind of work. It was built 30 feet wide and surfaced with waste from the quarry. It is sprinkled with water continuously to bind the road bed, and the trucks operating over it have given it a remarkable smoothness. At the dam site ramps have been provided with a short grade to reach each 25-foot lift as the fill progresses.

QUARRY OPERATIONS

A great many estimates were made prior to the beginning of the project as to what the bulking would be in the fill over the bank measure of the rock. Thus far, the swell has been 40 to 60 per cent, making a truck yard almost equivalent to a fill yard in place. The haul is two miles and the trucks average 25 minutes per round trip. The dumping time on the fill varies from one to three minutes, depending upon the amount of maneuvering necessary to place the load.

The specifications call for a minimum of 2,000 yards of fill a day. Rock is loaded in the quarry by two Bucyrus-Erie power shovels, one a 52-B and the other a 120-B. As compared to most construction jobs, this project possesses a much more difficult problem because the rock is blasted to allow as many large pieces as pos-

*An Outline
of the Operation
of Motor Truck Transportation
on the San Gabriel Dam
of the
Los Angeles County
Flood Control District*

sible. Naturally, the larger the rock the greater the danger of damaging the truck and shovel equipment. When rocks weighing 20 tons or more are loaded, smaller pieces are loaded first to form a cushion for the larger ones. The truck loads average 60,000 pounds gross.

THE ROADWAY ON THE FILL

Owing to the fact that most of the rock being hauled is in 1-cubic foot pieces and larger, it was a serious problem to create a roadway on the fill smooth enough to eliminate cutting and excess wear on the truck tires. At first, large rope mats, made up of 3-inch hawser rope, were placed at the dumping point, onto which the trucks backed. This method was discarded, however, as impractical and a roadway was smoothed off on the fill by hand labor.

The McCutchen Transportation Co. of Los Angeles



The Diesel-Powered Shovel Loading a Truck

is the contractor for the hauling and is using ten specially built Sterling trucks with chain drive and powered with Waukesha 6-cylinder engines. The rear axle, instead of being of the conventional I-design, is made of 6-inch heat-treated steel shafting. The frames are 9-inch double-channels, wood-lined with solid oak planks and all cross members and other units are bolted to the wood inlay with no metal-to-metal contact. The front tires are 24 x 10/50 pneumatics, while the rear tires are 40 x 14 solid duals.

The stripped chassis weighs 15,500 pounds and the body and hoists are Wood Hydraulic Hoist & Body Co. products. The body is built of heavy steel plate, fabricated with H beams and the floors are laminated with $\frac{1}{2}$ -inch plate at the bottom and a 2-inch wood filler. The engine, headlights and cab are covered with heavy armour plate as a protection against heavy stones should any fall in the hauling operations.

The 1933 Highway and Building Congress and Road Show

GAINING broader scope and a new significance because they will be staged coincidental with the meetings of virtually every national organization identified with highway and construction enterprise, the thirtieth Annual Meeting and Road Show of the American Road Builders Association, to be held in Detroit, January 16-20, although unchanged in its essential character, will come to a climax in a two days general program designated as the Highway and Building Congress.

The decision of the thirty-four participating and sponsoring organizations of the Congress to hold coincidental meetings followed by two days of general sessions recognizes the necessity for common action against present conditions in the highway and construction industry. Enlarged attendance at the individual organization meetings and the development of a common program looking toward economic recovery are expected to be the outstanding benefits of the Congress.

Retaining its individual character during the first three days of the Congress week, the annual convention of the A. R. B. A. will devote its energies to a number of subjects of immediate and vital importance to the highway industry. Outstanding among these are the questions of conserving motor vehicle and gasoline tax revenues to the purpose of highway construction and maintenance and the wisdom of a continued highway program to relieve unemployment. These subjects are also scheduled for prominent places on the Highway and Building

Congress program, the first day of which will be devoted entirely to highways. In connection with the Congress, there will be an exhibit at the Detroit Municipal Airport of equipment and materials used in highway construction and maintenance as well as a display of motor trucks.

Indicating the scope and variety of highway matters to be dealt with in the A. R. B. A. convention sessions is the fact that twenty-three committee reports will be made. Thirteen will be of a general nature, the remaining ten divided equally between the sessions of the City Officials' and the County Officials' Divisions. Three reports are scheduled for the first general session, covering different varieties of paving types, asphalt, brick and reinforced concrete. Another report to be made at this group session is that of the Regional Surveys and Plans Committee. Two subjects will be presented by the Public Relations Committee, "The Importance of Technical Direction of County Highway Operations" and "County Road Work and Its Relation to Unemployment". The second day of the Congress will be devoted to reports of two committees, Finance and Traffic. At a concurrent meeting, three general committee papers will be submitted, dealing with single track concrete roads, graded aggregate low cost roads, and the use of emulsions. In the afternoon, papers will be presented on the design, construction and maintenance of city streets. The sessions of Wednesday will be devoted to the activities of the Association, the subjects scheduled covering concrete pipe, corrugated metal pipe, and equipment for low cost roads. The concluding group of four reports presented that afternoon will deal with equipment for spreading and finishing, truck scrapers, snow plows, and hauling equipment.

Thursday will be Highway Day, at the sessions of which the following papers will be presented: "Highway Program of the Nation: Its Present Status and the Outlook for the Future"; "Importance of Highway Transportation to Economic Recovery"; "Correlation of Different Forms of Transportation"; "What Highways Mean to the Economic, Educational and Social Life of the United States"; "Highways Are Self-Liquidating Projects"; "Diversion of Motor Vehicle and Gasoline Tax" and "The Interest of the Agricultural Industry in Adequate Highways". Friday will be Construction Day and the organizations primarily identified with road building will lend their full support to this program just as those whose functions relate most definitely to general construction will share in the activities of Highway Day. The program for Construction Day is being arranged by the Construction League of the United States.

Removal of the World's Largest Cofferdam

THE removal of the world's largest cofferdam is under way at West St. John, New Brunswick. The dovetailed sheet piling, in some places sunk to a depth of 90 feet, was erected in connection with the \$10,000,000 new port development undertaken in 1928 by the Harbour Commissioners of St. John.

More than 125 men are reported to be working day and night shifts with locomotives, draglines and other equipment in the removal of the huge dam which held back the Bay of Fundy during excavation. The work is expected to require five to six months. During the operations, about 500,000 yards of stone and clay will be removed by dredging as well as some 200,000 yards by the draglines. The steel piling to be removed weighs 4,000,000 pounds. The cofferdam has a perimeter of 5,890 feet, while the area enclosed to permit dry excavation and concrete construction was 43 acres. The Atlas Construction Co. is the contractor for the work.

This project included the extension of the harbor and the erection of a new 700-foot concrete pier, as well as a 1,500,000-bushel concrete grain elevator and two grain car dumpers. There is a large area of fill for the extensive railway tracks which are to serve the harbor area.

Change of Methods

in

Loop Levee Enlargement

AN interesting example of the need for different types of equipment to handle dirt under different conditions in levee construction and enlargement was found in the Sternberg Co., Inc., work at Lake Providence, La. A levee had been built in 1917 but the subsequent floods had shown the need for enlarging it. Consequently the 1927 grade line was established and most of the work on the river this past season was the enlargement of old levees to build them up to the new grade line. The work of this contractor at Lake Providence was started in August, 1931, and tractors and crawler wagons. It was first necessary to build a roadway or ramp across the old borrow pits to permit the tractors and wagons to cross them. This alone required the handling of 2,000 yards of non-pay dirt and even with this roadway in, the haul for the wagons was 2,700 feet. This was rather long and did not prove satisfactory so that when the 1932 season opened with the water receding, the contractor replaced the tractors and wagons on a $\frac{3}{4}$ -mile haul with an industrial railway.

Borrow for the enlargement could not be taken from the old pits because of unsatisfactory material so an

Because of

Haul and Ground

Conditions

old levee was used with a P & H 775 dragline powered with a 120-horsepower Fairbanks-Morse diesel handling the dirt with a 45-foot boom and a $1\frac{1}{2}$ -yard Page bucket. The old levee was cut in three lifts, the first a 12-foot cut, the second to the bottom of the levee and the third a section below the base of the levee as a borrow pit. This method gave the contractor about 5,000 yards per station, the amount of dirt needed for the same length of enlargement.



Loading Abandoned Levee with a $1\frac{1}{2}$ -Yard Dragline

HAULING EQUIPMENT

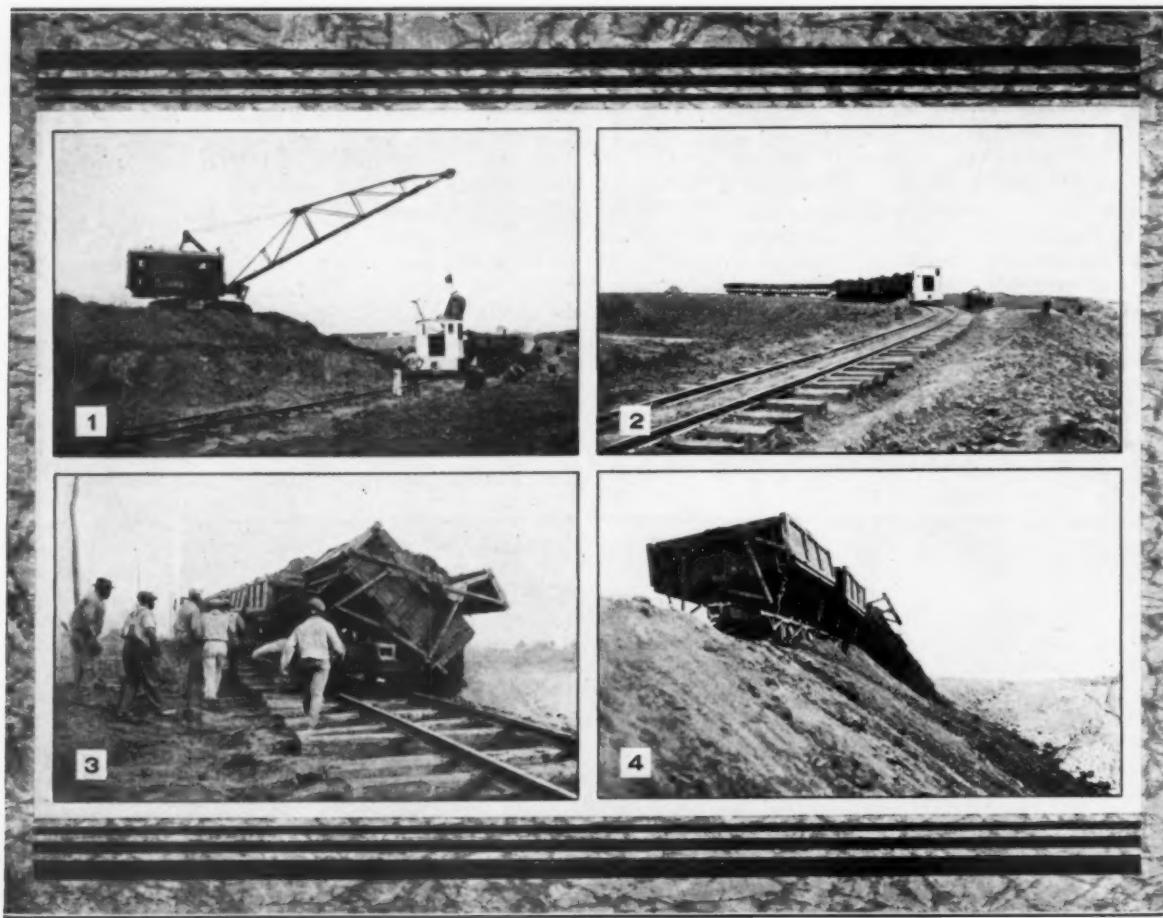
A 36-inch gage 70-pound track in 10-foot lengths was first laid on top of the levee to be enlarged and the dirt dumped to the side where the enlarged section was to be. As the work progressed a bulldozer was installed and it was unnecessary to move the track. Also the bulldozer cut a trench to undermine the loads as dumped so that they fell away from the cars and permitted them to dump clean. Any dirt left along the edge of the track was cleared away by the bulldozer between trains. Before the bulldozer arrived on the job the cars could not be dumped as quickly and it was necessary to move the track continuously toward the edge of the dump. This required the dump men to handle track all the time. It happened that one of the two industrial trains was laid up for repairs to the locomotive for some time so that the dump crew had time for the track shifting. When the two 8-car trains were running there was little time to waste between trains even with the long $\frac{3}{4}$ -mile haul.

The dragline worked three 8-hour shifts with an operator and an oiler for each shift. The trains ran on two 11-hour shifts with the following crew for each

shift: one man to clear the track at the dragline and spot the cars; two locomotive engineers; two switchmen; two track men; six men on the dump; a mechanic and a helper; an operator for the Caterpillar Sixty with the LaPlant-Cheote bulldozer, and the Superintendent. The Superintendent did not work on the night shift but lived within hailing distance of the work and was called if anything went wrong. As very good evidence that the work was carried on with proper diligence in his absence, the maximum haul in one shift of 11 hours was during a night shift when 33 trains were loaded, hauled to the dump and placed.

The locomotive equipment consisted of two 13-ton Vulcan gasoline locomotives with a 20-ton Whitcomb as a booster on the heavy grade from the dragline to the main track on top of the levee being enlarged. The trains were made up of eight cars of Western side-dump cars. There were nineteen of these cars on the job. With the two trains of eight cars moving as quickly as possible the outfit handled 3,000 yards of dirt in the two 11-hour shifts. The dragline loaded one car per minute with two and a half bucketfuls. In dumping the train the 6-man crew divided so that two men tripped and

(Continued on page 31)



MOVING DIRT WITH A DRAGLINE AND INDUSTRIAL RAILWAY ON THE STERNBERG CO. JOB AT LAKE PROVIDENCE, LA.

1. The dragline on top of an old levee loaded the dump cars with a $1\frac{1}{2}$ -yard bucket. 2. The long up-grade with a curve tested the power of the locomotives. 3. The six-man crew on the dump tripped, dumped, pulled back and latched the eight cars in one and a half minutes. 4. Dumping the third car of the train on the river side of the levee.

Speeding Up a Bay State Road Job



PRACTICALLY every road contract holds some feature of special interest. It may be that a superintendent is a genius for mechanical details which make the work easier, he may have a special grouping of his labor organization that clicks particularly well, or the equipment may be novel or exceptionally well-maintained. In Massachusetts last year on a 28,822 linear foot paving contract, 40 feet wide, on the main Boston-Providence road, it was a new paver that produced an average of 2,600 feet of pavement per 10-hour day.

Principal items of the project were:

Earth excavation.....	170,000 cubic yards
Ledge excavation.....	15,000 cubic yards
Ordinary borrow.....	36,000 cubic yards
Gravel borrow.....	77,000 cubic yards
Concrete paving.....	28,470 cubic yards
Reinforcing.....	1,242,600 pounds
Cable guard rail.....	14,000 linear feet
Trench excavation.....	13,000 cubic yards
Culvert pipe.....	23,000 linear feet

All of the work on this job was handled expeditiously but the chief interest is the operation of the new dual-drum paver. Carlo Bianchi himself stated, "Our experience with the double-drum concrete paver which we used on our section of the new Boston-Providence road running through Norwood, Sharon and Walpole, Mass., has been sufficient to convince us that it represents a definite improvement in paving machinery. It has satisfactorily set the requirements we had in mind when it was designed. The immediate operating organization around the paver consisted of one paving operator, one man dumping trucks at the skip, who also greased the equipment, five men puddling and spading, one finishing machine operator and three finishers. We found that but one Ord Type B double-screed finishing

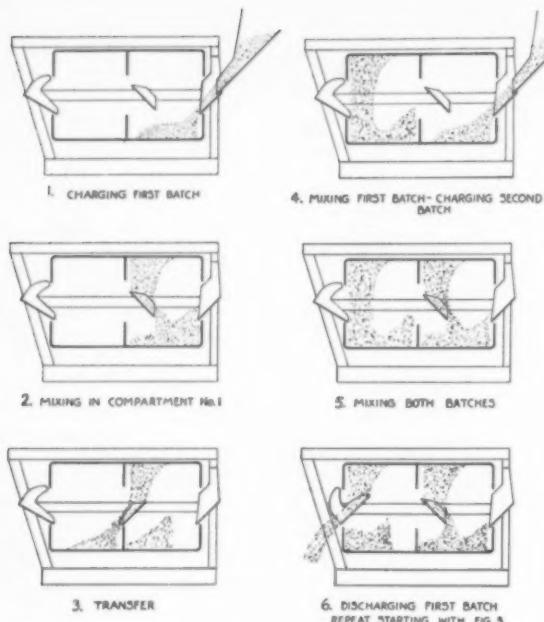
**Carlo Bianchi & Co., Inc.,
Increased Production
235.6 Cubic Yards Per Day
with a Double-Drum Paver**

machine purchased in 1932 was required. With this equipment there was no trouble in maintaining a pace consistent with the progress of the paver."

Carlo Bianchi & Co. ordinarily uses the following organization for its regular 27-E Ransome paver: one paver operator, one man dumping trucks at the skip and greasing the equipment, three men puddling and spading, one finishing machine operator and two finishers.

With the dual-type equipment the average high-run for a 10-hour working day was 2,754 linear feet of pavement, poured 10 feet wide and 8 inches deep. This is equivalent to 680 cubic yards of concrete. The average daily run for the entire job was 2,600 feet. This output represents a considerable increase over the average which Bianchi obtained with the use of his standard 27-E paver when he averaged 1,800 linear feet of pavement, 10 feet wide by 8 inches deep, per 10-hour working day or the equivalent of 444.4 cubic yards of concrete.

The advantages of the dual-type paver are quite clearly indicated by the above figures. The net increase of three men in the immediate operating group is insignificant when considered in relation to the increase of 235.6 cubic yards or 50 per cent in the daily output of finished concrete pavement.



Movement of Batches Through the Double-Drum Paver

OTHER ADDITIONAL LABOR REQUIRED

Of course certain rearrangements were necessary in connection with the regular supporting operations which have to be carried on in the ordinary course of paving. For instance, it was necessary to employ two additional men in form setting, but this had no adverse effect on the unit cost per linear feet of this operation. In addition, it was necessary to increase the number of trucks employed in delivering batches of aggregate to the skip, so as to guarantee a proper supply of these materials at the required intervals of time. In this connection, too, the fact that more trucks were employed did not affect the unit hauling cost. The most important factor in this connection in any event is the length of haul.

It was not found necessary to increase the capacity of the screening plant providing aggregate because the

double-drum paver was used, as the same screening plant set-up which was normally used was able to meet every demand made upon it. The condition of the bank from which the materials were withdrawn would, of course, have a very definite effect on this situation, but on this project the gravel supply was both adequate and of uniformly high quality.

OPERATION OF THE PAVER

The Ransome 27-E dual paver on this job was similar to a single batch paver except that the drum was long enough to allow the mixing of two batches at one time. The drum was divided into two compartments and worked automatically as far as discharging the batches was concerned. The first batch was loaded from the skip to the first compartment and partially mixed, then as the second batch was hoisted in the skip, the first batch was transferred to the second compartment and the mixing completed. When the third batch was hoisted in the skip, the first batch was deposited from the second compartment to the bucket, the second batch was transferred from the first compartment to the second and the third batch was delivered from the skip to the first compartment. Thus two batches were mixed at the same time. With a $1\frac{1}{4}$ -minute mix, this completed a batch approximately every $47\frac{1}{2}$ seconds.

The mechanics of the operation is very simple. With a batch in each drum, as soon as the batch meter bell rings, the operator throws the hand lever controlling the power discharge of the outer chute which throws this chute into the discharge position. As soon as the batch is discharged, the operator steps on a foot pedal, which causes the outer discharge chute to be thrown out of the drum, and the transfer chute to be thrown into transfer position. By means of a delayed timing device, the operation of the pedal engages the power loader clutch which starts the power loader skip upwards. As the skip goes up, it opens the water valve which admits water to the drum and closes the valve from the auxiliary tank to the measuring tank. Just before it reaches the top, it causes the transfer chute to be thrown into mixing position and as it reaches the top, it knocks out

(Continued on page 37)



Action Around the Paver on the Carlo Bianchi & Co. Job

Drilling and Blasting in Highway Grading

Part V

THE amount of explosives required per cubic yard of identical pay materials is generally larger in highway grading than in most lines of rock work, since it is so essential that all the material be broken into fragments small enough to permit the fast and steady operation of the shovel. In most highway work, this does not mean the use of exceptionally large single charges but rather closer spacing of holes, lifts of moderate depths, and a careful proportioning and placing of the charges of the proper kind of explosive so as to utilize best the full force of the explosion in loosening and shattering the material.

In very hard, tough material the holes should always be sprung so as to form a cavity or chamber of sufficient size to accommodate most of the charge at the bottom of the drill hole. The same is also true of deep holes in the softer rocks, except when the danger of losing the hole by the springing is too great. To form this cavity in hard rock may require the firing in each hole of as many as five or six gradually increasing successive charges of high-strength explosive. On most of the jobs studied one to three successive charges usually proved sufficient to spring the holes, although one single hole has a record of 16 successive charges.

The following table shows for a number of jobs the amount of explosives used both for springing and blasting and also certain other pertinent data as to the type of explosive, average depth of holes, and the condition of the material after the blast. The two columns showing respectively average depth and average spacing of the holes give the arithmetical average for all holes for which complete data were available. Since sidehill cuts predominated on all but three jobs, 1, 2 and 5, these figures give only a roughly approximate measure of either the actual depth or the actual spacing of the individual holes and were added only to give a general idea of the nature of the work.

This table shows that the average amount of explosive used per cubic yard of rock on each of these jobs varied from 0.50 to 1.90 pounds, and that the job using the smallest amount of explosive resulted in good breakage of the material while the breakage on the job using the most explosive was very poor. This helps to emphasize the fact that good breakage or fragmentation can be obtained fairly easily in some materials, but is difficult to obtain at all in others, and especially so in shallow cuts of tough material. The poor results on job No. 10 can be ascribed very largely to the fact that the holes were not sprung. Consequently, the charge in a 5-foot hole usually came within about 18 inches of the top, which was insufficient space for proper tamping even when 60 per cent dynamite was used. Near

Reported by
Andrew P. Anderson

Highway Engineer
Division of Management
U. S. Bureau of Public Roads

the close of these studies, springing the holes three times with one-half, one and two $1\frac{1}{2}$ by 8-inch sticks of 60 per cent dynamite was tried, with the net result that the use of the same total amount of explosive per cubic yard gave a better fragmentation with a spacing of 4 by $4\frac{1}{2}$ feet, than had been obtained from a 3 by 3-foot spacing of unsprung holes. This wider spacing required only half the amount of drilling previously necessary.

AVERAGE AMOUNT OF EXPLOSIVES USED PER CUBIC YARD OF PAY MATERIAL
ON SEVENTEEN TYPICAL JOBS

Job No.	Explosive per Cubic Yard				Condition of Material for Moving with Shovel	Kind of Material	Average Depth of Holes (approxi- mate) Feet	Average Spacing of Holes (approxi- mate) Feet
	Dynamite or Gelatin	Black Powder	Total	Blast- ing Holes Lbs.	Blast- ing Lbs.			
1	0.04	....	0.85	0.89	Poor	Soft and seamy granite	30	25 by 18
2	.55	....	.98	1.53	Poor	Hard basalt	18	19 by 19
3	.27	0.44	....	.71	Good	Massive granite	14	10 by 8
4	.01	....	.53	.56	Fair	Conglomerate	15	Variable
5	.25	.85	....	1.10	Poor	Stratified limestone	16	15 by 12
6	.06	....	1.06	1.12	Good	Shale	13	12 by 12
7	.02	.03	45	.50	Good	Disintegrated granite and shale	10	Variable
8	.15	.16	.67	.98	Fair	Stratified limestone and shale	12	10 by 10
9	.02	.17	.50	.69	Good	Seamy basalt	21	15 by 15
10	(*).190	....	1.90	1.90	Very poor	Hard granite	5	3 by 3
11	.25	.75	....	1.00	Poor	Very hard granite	14	8 by 8
12	.55	1.00	....	1.55	Good	Very hard felsite	13	7 by 7
13	.14	.50	....	.73	Fair	Hard schist	12	9 by 9
14	.10	.50	....	.60	Good	Foliated granite	10	10 by 10
15	.18	.75	....	.93	Fair	Hard granite	16	8 by 8
16	.15	.87	....	1.02	Good	Very hard granite	16	8 by 8
17	.10	.47	....	.57	Good	Soft granite	18	10 by 10

* Near close of studies springing was begun, using approximately 0.30 pound of 60 per cent dynamite per cubic yard for springing and 1.60 pounds for blasting.

† Part of this was used in burning the deeper holes to keep drills from sticking.

THE TRIAL SHOTS

In shale, hardpan, and some soft or partly disintegrated rocks the use of a black powder is usually preferable, as these blasting powders are much slower in action and give a very large volume of gas which exerts a lifting or heaving action that is very effective in this type of material. The ordinary black powder can only be used in dry holes; and, since both sidehill and through cuts in road work are likely to be more or less wet, a low-strength, slow dynamite or blasting gelatin must generally be used. Because of the prime importance of insuring good fragmentation the use of a rather high-strength dynamite or blasting gelatin is generally found most satisfactory for the harder rocks.

For the first trial purposes, a blasting charge of 1 to $1\frac{1}{2}$ pounds of 50 per cent or 60 per cent dynamite or its equivalent per cubic yard of burden is suggested for untried material of a hard and tough character.

For the first trial only enough holes should be drilled and fired to make a fair test of what this spacing and loading will do in the given material. From this evidence either the spacing or the loading or both should be modified as the results indicate to be necessary or advisable. The following table is intended for trial use only where the depth of cuts is between 5 and 20 feet.

SUGGESTIONS FOR SPACING OF DRILL HOLES AND AMOUNTS OF EXPLOSIVES FOR THE FIRST TRIAL SHOTS IN UNFAMILIAR MATERIALS WHERE HARD SHOOTING IS PERMISSIBLE

Type of Material	Spacings of Drill Holes ^a	Coefficient ^b of Depth of Hole Below Grade	Pounds of Explosives ^c Per Cubic Yard of Burden	Use an Explosive Equivalent to—
Any rock exceptionally difficult to shatter.....	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{4}$	60 per cent straight dynamite
Most hard, dense, unweathered ledge rock	$\frac{1}{2}$	$\frac{1}{2}$	1	80 per cent straight dynamite
All medium hard, weathered, or partly disintegrated rock; those which shatter readily and very hard shales.....	$\frac{1}{2}$	$\frac{1}{2}$	1 to $1\frac{1}{2}$	40 per cent straight dynamite or blasting powder if holes are dry.
Ordinary shale, hardpan, and similar materials..	$1\frac{1}{2}$	1	$\frac{1}{2}$ to 1	Blasting Powder if holes are dry; otherwise 20 per cent straight dynamite.

* See diagram showing spacing of drill holes.

^c The loading suggested is net amount of explosives for actual blast and does not include amount required for sprung holes.

The procedure for finding the actual amount of explosive which should be placed in each hole is as follows: measure the depth of the hole, its distance from the next hole in the same row, and also the distance from the hole to the face or to the next row of holes.

Multiply these three distances together and, if in feet, divide the product by 27. The quotient is the "burden" on this hole in cubic yards. Multiply this burden by the amount of explosives to be used per cubic yard. This gives the amount of explosive to be placed in that hole. Thus, if a hole is 13 feet deep and the spacing is 6 and 7 feet respectively, then the burden is

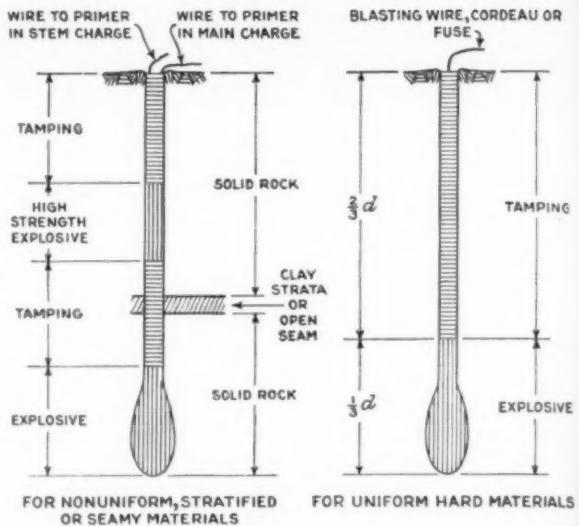
$$\frac{13 \times 6 \times 7}{27} = 20.2 \text{ cubic yards.}$$

If the rock is very hard and tough so that $1\frac{1}{2}$ pounds of dynamite are required per cubic yard, then the charge for this hole will be

$$20.2 \times 1\frac{1}{2} = 22.7 \text{ pounds}$$

For shale, hardpan, or soft or partly disintegrated materials the trial charge might well be a coarse blasting powder; or, if the holes are wet, a slow dynamite should be used. If the ground will permit springing without the loss of too many holes they should always be sprung sufficiently to chamber practically the entire charge and should be loaded and tamped as shown in the diagram.

When there are intervening or alternating horizontal strata of hard and soft material, closer than normal spacing will usually be required and a portion of the charge in the form of dynamite should be placed in the stem of the hole within the hard strata as indicated in the figure. These auxiliary charges in the stem should all be fired simultaneously with the main charge by means of independent caps and primers wired to



Suggestions for Locating the Blasting Charge. Holes Should Be Sprung Until the Desired Amount of Explosives Will Not Occupy More Than One-Third of the Total Depth. In Material Which Is Hard to Shatter Properly, a Small Charge of High-Strength Explosive Should Also Be Placed in the Stem Whenever the Distance to the Nearest Hole Exceeds 8 Feet. No Stem Charge Should Have Less Than 2 Feet of Tamping Over It.

the same circuit. This method should give fairly satisfactory results as far as fragmentation is concerned, provided that the greatest spacing of the holes and rows in fairly hard or tough material is not more than three-quarters the depth of the cut, and that these holes penetrate sufficiently below grade to leave no hard, projecting points between adjacent holes. If the trial blast shows insufficient fragmentation the amount of explosive may be increased, or if much of the material is broken too large the spacing should be decreased. Since the burden on any hole of a given depth varies directly as the product of the spacings between holes and rows, the amount of explosive placed in each hole should be varied proportionally whenever the distance between holes and rows is increased or decreased.

Special care should always be taken to make certain that the holes along the ditch or slope lines are placed and spaced correctly and are of sufficient depth to insure full breakage to the bottom of the established ditch line. In deep holes of difficult materials where the requirements as to slope smoothness are severe it is frequently advantageous to drill the slope or ditch holes at about the same angle as the specified side slope. Then, instead of placing the entire charge at the bottom of the hole, a part is placed in the stem as a secondary charge which is primed and wired so as to explode simultaneously with the main blast.

CLOSER SPACING FOR LIGHT SHOOTING

Where heavy shooting is not permissible the only way in which good fragmentation can be obtained is by a closer spacing of the holes. But drilling is expensive. A foot of drill hole seldom costs less than a pound of good grade explosive and frequently as much as 2 pounds. The spacing should therefore be the greatest

at which sufficient fragmentation to permit easy shovel operation can be achieved within the limits of the heaviest permissible shooting. In very hard, tough rock this maximum permissible spacing is sometimes as low as one-half and seldom exceeds three-quarters the depth of the cut for cuts less than 16 feet deep, and probably rarely exceeds 12 feet of the actual distance for cuts over 16 feet, unless supplementary charges are placed in the stem of the original or master holes and also in holes which have been drilled to within one-third to one-half the depth of the cut near the middle of each quadrilateral formed by four deep holes.

SUMMARY

The sole purpose of drilling and blasting in highway grading work is to condition the material for removal readily with a power shovel. Moreover, the daily or hourly cost of the power shovel grading outfit is high—usually between \$15 and \$25 an hour—and is practically constant whether the rate of production is high or low. Low production cost can therefore only be obtained through high production; but in order to maintain a high production rate the blasting must be thorough and sufficient to shatter the material into fragments small enough for ready handling by the shovel. The blasting must also proceed sufficiently ahead of the shovel so that there will be no appreciable delay from waiting for the blasting to be done. This means, in general, that the blasting of each cut should be completed before the work is begun on that cut by the shovel. On this account, road work seldom affords much opportunity for firing the various rounds against a free face as in quarry work. As a result, relatively more explosive is required and relatively closer spacing of holes is necessary to insure proper fragmentation.

Perhaps the most significant feature disclosed by this study of drilling and blasting in highway grading work is the very general absence of that grade of supervision, organization, and matured planning which is given to the remainder of the job. Frequently all decision as to such important points as the location, spacing, and depth of holes is left entirely to the drillers. Too often this results in the holes being placed where it is convenient to drill rather than where they will do the most work. This lack of planned direction usually also extends to the method of loading and the amount of explosives used in each individual hole. With such conditions forming the general rather than the exceptional practice, there is no wonder that nearly three-quarters of all rock jobs reported the shooting as unsatisfactory from the point of view of fast, easy shovel operation. All the available data indicate that the cost of this poor shooting is as high and, if we include the usual pop holes to attain grade and the block holes and mudcaps necessary to break boulders, frequently much higher than on those jobs where the shooting is good. For similar conditions and materials, the poorly-shot jobs often actually pay more per cubic yard for their drilling and blasting than do those jobs on which the shooting is good, and in addition carry the penalty of a low rate of production on the part of the shovel. The conclusion therefore, seems inescapable that, under present close margins of bidding, the grading contractor who wishes to remain in business cannot afford to permit poor shooting on his rock jobs.

Change in Methods in Old Loop Levee Enlargement

(Continued from page 26)

dumped the cars and the other four pulled them back and latched them. With this organization an 8-car train was dumped and on its way back to the dragline in 1½ minutes. The trains were passed on a switch at the dragline so that with one train on the track near the dragline, the other could run around behind the first train on a switch away from the dragline and then be in position to pull up immediately after the loaded train had cleared.

There were times when the first train had not returned from the dump when the second had loaded. This was due at times to the over-zealous locomotive engineers who had a tendency to drive a bit too fast for the weight of the train and rails and thus run off the track. When there were any delays for any reason whatsoever the dragline operator spent the time pulling in the far dirt and piling it ahead of the dragline. Thus when the train pulled in there was a short swing to get the dirt for loading and a minimum of loading time.

During the day shift, two men used a 2-mule plow team to break sod on the section being enlarged. The specifications required a 25 per cent allowance for shrinkage. Because of the unstable ground on which the enlargement was being made the contractor took advantage of the use of subsidence gages to measure any possible lowering of the base of the levee because of the added load of the dirt in the enlarging section. These subsidence gages are 5-foot square steel plates 3/16-inch thick and are placed at the elevation of the ground level. The government permits payments for added dirt if the ground subsides at these gages and allows 50 feet on either side, thus making payment for an equal settlement over one full station.

The new levee section was topped out with the dragline by pulling dirt up the slopes with the dragline not on top of the levee. A Kohler 1,500-watt portable electric plant was mounted in a house on skids so that it could be moved readily from one part of the job to another by the tractor. A string of six 200-watt lights and two 100-watt lights were used on the dump.

PERSONNEL

This 200,000-yard levee enlargement 4,100 feet long was awarded to the Sternberg Co., Inc., of St. Louis, Mo. On this particular section Stacy McAdams was Superintendent for the Sternberg organization. The work was done under the direction of Major T. B. Larkin, District Manager, Vicksburg District, with H. K. Doyle, Area Engineer, Lake Providence, La., in charge in the field.

Simplified Practice Recommendation Covering Asphalt

SIMPLIFIED practice recommendation No. 4, covering asphalt, has been reaffirmed, without change, by the standing committee of the industry according to an announcement by the division of simplified practice of the Bureau of Standards. This action is based on a recent survey of production which showed that 94 per cent of the asphalt produced by the sixteen companies reporting conformed to penetrations recommended in the simplified schedule.

Building America's Roads Safely

By
Thomas W. Walton
Comptroller
Henry W. Horst Co.
Philadelphia, Penna.

IN some states there are erected at particularly dangerous highway crossings or curves, white crosses, one for each fatal accident that has occurred at any spot so marked. Gruesome but effective, their white arms bear silent witness day and night to the dangers of the road. It is well for the comfort of those of us who have had to do with the construction of highways that there are not crosses of another color, some of them red perhaps, telling of other lives that have literally gone into the construction of the highway. Were we to place reminders of some type along the highways for all serious accidents, all lost-time accidents, let us say, it would be an unfeeling contractor indeed who would not leave his car behind whenever possible to ride the rails or take to the air.

It is impossible to lay down rules by which "no-accident-built" highways can be constructed. Each contractor and each job has its own special problems, but there are a few suggestions which, if followed, can help us toward that ideal. A few points which any organization should consider essential follow:

1. An experienced, dependable superintendent, clear of vision, free of bias, fair in all dealings and above all, considerate of his men.
2. Simple but clean and adequate headquarters where careful records are kept, first aid materials are always on hand, and where first aid is freely administered with *clean hands*.
3. A requirement that all injured persons report promptly for first aid; that field men report in triplicate, on insurance forms, every accident, regardless of how minor. One copy

goes to the insurance carrier, one to the home office and the third to the field office files.

4. Public liability and property damage cases reported with the same care and promptness.

5. A skilled mechanic who knows and keeps in proper repair all equipment; who does not wait for reports of evidence of needed repairs but who examines all equipment and allows none which is not in first class condition to be used. On small jobs this man can look after tools, explosives, etc., but he must be dependable and safety-minded. A negative essential which we shall not dignify with a classification number is No Drunken Drivers. A driver or operator of machinery who drinks is a dangerous employee.

If all these essentials have been observed and yet the coveted safety record has not been reached, we must remember that discouragement has no place in our program. Distressing experiences do come. Men will take chances against which they have been warned time and again, and the contractor comes to feel "What's the use?" The program of safety moves slowly, but the leaven is at work in the forces of general contractors, and high though our frequency rate may be, it is not nearly so high as where similar effort has not been expended. Let there be no let-up, for both humanitarian and economic reasons. There is no place for discouragement in this program.

CARRY THE WORD TO NEW CONTRACTORS

Then too, the gospel must not only be practised but spread. In these times of unusual shortage in construction work in general, many contractors who have never before built roads are seeking to enter the field. Naturally hazards, new to them, arise. Costs are increased. All have cut to the quick in preparing bids, and in carrying out the contracts one of the first temptations is that of eliminating or at least reducing the safety program. These men must be told of the hazards. They must be told not only because of their inexperience but also because of the likelihood that in their employees on the road job there are many men who have hardly had tools in their hands before. Most organizations have some of these men in their employ these days, but the contractor new in the road building line is likely to have them in greater proportions. Therefore the gospel of safety must be spread!

When we see a damaged car or a broken piece of equipment,

(Continued on page 37)



Many Hazards in a Small Area—Hence the AGC Safety Poster, "Your Life—Help Us Protect It"



The Editor Comments

Out-of-Date Construction Equipment

How many contractors realize that during the last two years when manufacturers have not been able to sell construction equipment, because of stagnation in the industry, they have been improving engines, drives and other features of construction machinery? The production department has been practically idle, but the research and development departments of our leading manufacturers have been active so that when we again reach a normal volume of construction, not a boom volume, the manufacturer will be ready to place in your hands a piece of equipment which will work more economically and far more satisfactorily than any you have known before.

What does this mean regarding your present equipment? It means simply that it is rapidly becoming obsolete. For several years most contractors have refrained from buying new equipment unless absolutely necessary. Breakdowns are expensive in lost time. Bids have been shaved unusually close so that profits were near the vanishing point even when the contractor secured all the breaks; but when the machinery breaks that puts an end to profits.

As one means of stimulating industry in general, A. W. Robertson has headed a drive to put new machinery and other equipment into factories all over the land. Since August, he and his fellow workers have been going about the country to persuade every kind of industry that this is the time to rehabilitate. Until the results were recorded, according to the *New York Sun*, there was considerable doubt about the response to this movement. The present report, however, shows a list of trades and industries that have announced their intention to spend altogether more than \$70,875,000 to remodel and improve their establishments. This means that hundreds of manufacturers have acted on their belief that this is the time to get ready for full-time operation. Will the construction industry be ready and properly equipped when we return to normal activity?

Why Should Unfair Competitive Practices Be Countenanced in Times of Depression?

Bid peddling is one of the curses of the construction industry. It is altogether too common for contractors to bargain on prices after bids have been opened. If a contractor bases his bids on a price given by a material man or equipment manufacturer or distributor, knowing that the price is fair and that the giving of that price has entailed certain expenditures of time and

money, the contractor is morally bound to give his business to the company supplying the prices to him.

The practice of shopping around for still lower prices after the contract has been awarded, simply because the contractor is definitely in a position to place the business, is in utter violation of good business practice and business morals. In a resolution adopted by the National Conference on Construction this statement is made, "While the present adverse economic conditions make it difficult to eliminate unfair competitive practices, we believe that every effort should be made to establish the principle of adhering to original bid prices in relations between contractor and owner, general contractor and subcontractor, contractor and material supplier, and urge the support of all measures to insure the maintenance of fair practices"

There must be no let down in the war on bid peddling merely because we are in the midst of adverse economic conditions. Unfair competition contributed its share to the present economic situation and must not be countenanced any longer. Manufacturers, distributors, contractors and subcontractors who comprise the greatest industry in America must realize the responsibility and opportunity at this time to eliminate bad practices by immediate exposure. When there were hundreds of contracts with plenty to go around, bid peddling was "just too bad," according to most contractors. Now with the ratio of contractors to jobs greatly altered, bid peddling can be more definitely spotted and conditions changed for the better.

Why Not BUILD Back to Prosperity?

It was a slowing up of construction because finances were devoted to quick profits in stocks in 1870-73 that caused the financial panic of 1873-79. It was a large program of railroad construction which increased employment, created orders for construction materials and equipment that turned the business tide and brought about the better years of 1879-83. The same road out of depression can be used today by building self-liquidating projects. The first article in this issue is an authoritative discussion of the outlook in the construction field for 1933. While its tone is more optimistic than many of us may feel at present, this optimism is not forced but is the result of a study of facts and funds available. Let us build back to Prosperity.

Theodore Reed Kendall

Legal Points for Contractors

These brief abstracts of court decisions in the contracting field may aid you in avoiding legal difficulties. Local ordinances or state laws may alter the conditions in your community. If in doubt consult your own attorney

Edited by A. L. H. Street, Attorney-at-Law

A Hazard in Public Construction Contracts

Lawyers are often blamed for their efforts to "dodge the law" for their clients—although the clients do not usually join in heaping the blame. If a lawyer cannot escort his client up the front steps and into the main entrance of a situation, he is supposed to be able to find some way of approaching from the rear or through a cellar window.

An interesting example of an unsuccessful attempt to get around a well-established principle appears in a case lately decided by the Appellate Court of Indiana (169 N. E. 77).

A contractor expended considerable money and time on a school building job before it was discovered that the school board had acted without legal authority in making the contract, because of statutory debt limits, etc. His lawyers evidently foresaw that it would be an uphill pull trying to collect from the district for, instead of trying that, they sued to hold the school district officers liable on the theory of a conspiracy between the officers, inducing him to enter into a contract that they knew, or ought to have known, they had no right to make.

But the court decided that the suit could not be maintained, because the contractor was bound himself to know all the legal limitations on the power of the board to act in the matter, and that the board was under no fiduciary obligations to the contractor. The court adds that a bidder or contractor for public work, "must examine the records and determine for himself whether the proper steps have been taken to enter into a lawful contract."

When Does a Wrongfully Dispossessed Contractor's Damage Claim Accrue?

"We've decided to terminate your contract to construct a waterworks reservoir for us and you are hereby notified to leave the job and let us finish it," said the fathers of a city in Washington to the contractors.

"Oh, yeah," said the contractors and kept on plugging away on the job for more than four months longer, when the city came along and took possession.

Under the Washington laws, as under the laws in many other states, the contractors' damage claim had to be filed with the city in a case of this kind within thirty days from the date of the accrual of the claim. The contractors filed claim within that time after they were dispossessed on the job. But this was several months after the city had given notice of termination of the contract, and its counsel claimed that the thirty days ran from that date.

In the case of Boyer v. City of Yakima, 287 Pac. 211, the Washington Supreme Court decided that the notice was given within the time required by law. Said the court:

"We are of the opinion that appellants [the contractors] had the right to ignore the city's notice of cancellation of the contract on October 3, 1927, as a breach of the contract, especially since they were not then physically disturbed in the continuance of the work under the contract; and had the right to regard the taking from them by the city of the physical possession of the premises and work on February 9, 1929, as a breach of the contract—there then accruing a cause of action in their favor for damages on account thereof."

Difference Between "Employee and Independent Contractor"

No matter how high may be one's aspirations to be a "big shot," or to have the title of one, it's money in one's pocket to be a plain ordinary "hired man," rather than an "independent contractor," when he is injured and the person or concern in whose service he was engaged at the time was not at fault for the accident.

To illustrate, in the case of Van Watermeulen v. Industrial Commission, 174 N. E. 846, the Illinois Supreme Court was confronted with the question whether a gravel hauler was an employee of a road contractor, in which case an award against the latter was proper under the Illinois Workmen's Compensation Act, or whether he was an independent contractor, in which case an award would be improper. Holding that the hauler was an employee, the court said, in part:

"One of the principal factors which determine whether a worker is an employee or an independent worker is the matter of the right to control the manner of doing the work, not the actual exercise of that right. . . . The length of time the deceased had been employed is immaterial. . . . The work may be such that very little supervision is necessary. The fact that payment is made by the piece or job is not necessarily controlling. . . . If the employer directs where to unload and how the unloading is to be done and retains the right to discharge the employee, the relationship of employer and employee is established. . . . The evidence here shows that the deceased and other truck drivers doing the same work furnished their own trucks and worked for the defendant at 30 cents per load per mile, or 60 cents for hauling a load two miles. They had to keep moving to hold their jobs, and other men loaded their trucks at the railroad and dumped them at the mixer. It appears that the employer controlled the loading of the truck, the destination of the load, the dumping of the load, the kind and quantity of material hauled, the distance traveled by the truck, the amount of pay received for the load and the right to discharge the employee, and, through the ownership and operation of the machinery which loaded the truck and the machinery for the disposition of the material hauled, the employer controlled the hours of the trucker's employment. The employee was thus subject to his employer's control as to terms, kind, results, and duration of employment sufficient to establish the relationship of employer and employee."

Knowingly Filing Invalid Mechanic's Lien May Be Costly

Almost any court would be apt to decide what the Louisiana Court of Appeal decided in the case of Flournoy v. Robinson-Slagle Lumber Co., 136 So. 194.

A material company filed a lien against a woman's property, although she was not liable on the bill and the time for filing a lien had passed.

The court not only upheld her suit to strike off the lien, with costs against the material man, but also allowed a judgment for \$150 as damages for anxiety caused by wrongful filing of the pretended lien.

*ies.
own*

*"big
et to
dent
n in
t for

strial
was
s an
against
nsa-
er, in
the

er a
atter
t the
e de-
ay be
that
con-
how
charge
ee is
eased
their
load
y had
their
it ap-
truck,
kind
y the
ight to
oper-
the ma-
employer
the em-
terms,
establish*

Lien

*isiana
inson-
erty,
filing*

*e lien,
judg-
l filing*

A Contributor to

No. 1

Construction Progress

FIIFTY years of engineering service has been Robert Ridgway's contribution to the progress of construction. Fifty years of honest and untiring effort and genius, in the fields of railroad, water supply and subway construction, brought him to the position of Chief Engineer of the Board of Transportation of the City of New York, from which position he retired October 31, 1932.

Mr. Ridgway's career started in 1882 as a chairman at a salary of \$40.00 per month. He began with the handicap of an inadequate technical education and met with all sorts of discouragements and advice to give up engineering, because of lack of training. He had no thought in those days that his career would carry him to the top of his profession, and he himself has said that it is probably just as well he did not foresee it, because it might have disturbed the rugged training, and the fight against discouragements and adversity which was so much a part of his early work.

In 1884 he was called from his railroad work in Northern Wisconsin to report as a leveller to the Chief Engineer of the Aqueduct Commissioners of New York City. From 1886 to 1900 he was Assistant Engineer on construction of the Croton Aqueduct and various reservoirs and dams. From 1900 to 1905 he was with the Rapid Transit Commission. Then he was appointed Division Engineer and later Department Engineer on construction of the Catskill Aqueduct. In 1912 he was called to the position of Engineer of Subway Construction for the Public Service Commission, First District, New York City, in charge of rapid transit construction for New York City and in 1921 became Chief Engineer of the Transit Commission. In 1916 and 1917 he was a member of the Chicago Traction and Subway Commission. In July, 1924, he was appointed Chief Engineer of the Board of Transportation of the City of New York, which position he held until his retirement last fall. Mr. Ridgway however has retained his associations with engineering activity and is at present Consulting Engineer for the Board of Transportation of New York City. In addition to his work for New York City, he is serving as Consulting Engineer for the Government of Japan for railways and Consulting Engineer on subways for Tokio and Osaka, Consulting Engineer for the Rapid Transit Subways of Chicago, Chairman, Board of Consulting Engineers, Transbay Bridge, San Francisco, and a member of the Colorado River Board on Hoover Dam. He is a past president of the American Society of Civil Engineers.

In his speech at a testimonial dinner given Mr. Ridgway upon his retirement he said, "It has been my good fortune to have been connected all my working life with the construction of public works and my privilege to



Robert Ridgway

help build them. I have found more happiness in my work than in what most people call recreation. The forces for construction of public works in this City constitute a small and efficient army of peace engaged in work that is designed for the welfare of the community. It is composed of all arms of the service; administrators, engineers, competent contractors with their technical men, trained superintendents and foremen, and skilled workmen. . . . I often wonder if the public has ever tried to estimate the value of this army of specialists. Without it, the work that is done would be far less efficient, and more hazardous and more costly. I am proud to have been a part of it. The contractors take jobs to make a profit, of course, but with few exceptions they desire to do a creditable piece of work and are proud of what they accomplish. No sympathy is wasted by the public on those who have to take a loss, and there have been many of the old timers who have been driven to the wall after contributing in the way of losses to the work that the public uses."

It is characteristic of Mr. Ridgway that he attributes so much credit for his accomplishments to those who have worked with him. An editorial of the *New York Times* of October 24 said, in a comment upon his retirement, "Mr. Ridgway has been quietly and efficiently going about the business of designing and building subways that have been a model for the rest of the world, and setting an example of devotion and integrity in public service. Unfortunately the public wakes up to this only on the eve of his retirement after forty-eight years of duty, of which thirty-two were spent in solving the city's difficult transit problems. . . . For nearly half a century he worked in a glorious obscurity, holding himself aloof from politics and permitting no political interference in performing tasks which, in the opinion of General Goethals, were as formidable as any that had to be overcome in Panama."



C. E. Baker, Smith Booth
Usher Co., Los Angeles, Calif.
First Vice Pres., A. E. D.



E. K. Hurst, Western Mate-
rial Co., Sioux Falls, S. D.,
Pres., A. E. D.



Robert R. Nixon, Nixon-Has-
sel Co., Chattanooga, Tenn.,
Second Vice Pres., A. E. D.



A. C. Blaisdell, The Queen
City Supply Co., Cincinnati,
Ohio, Secy., A. E. D.

*Officers
and
Members
of the
Executive Committee
of the
Associated Equipment
Distributors,
the Annual Meeting
of Which
Will Be Held
January 15-16, 1933,
Detroit, Mich.*



E. W. G. Gierke, Gierke-Robin-
son Co., Davenport, Iowa



H. W. Fletcher, Fletcher
Equipment Co., New Orleans,
La., Treas., A. E. D.



Victor L. Phillips, President,
The Victor L. Phillips Co.,
Kansas City, Mo.



Fred Mattheis, President,
Hedge & Mattheis Co., Boston,
Mass.



Thorman W. Rosholz, President,
Thorman W. Rosholz Co., Min-
neapolis, Minn.



John C. Louis, President &
Treasurer, John C. Louis Co.,
Inc., Baltimore, Md.



Roy C. Whayne, Roy C. Whayne
Supply Co., Louisville, Ky.

Annual Meeting of the Associated Equipment Distributors

THE annual meeting of the Associated Equipment Distributors will be held on January 15 and 16, 1933, at the Hotel Statler, Detroit, Mich. The program for this meeting has been planned with particular care, and speakers have been selected who have a very definite message that will be helpful in the conduct of the equipment business.

The meeting will open at 9:30 A. M., January 15. The morning will be given over to the reception of new members, following which there will be an address by President E. K. Hurst, and the reports of the Secretary and Treasurer, after which the committees will give their reports. The afternoon will be given over to speakers on the following subjects: "What Sales Policy Will the Manufacturers Have in 1933, and How Will It Affect the Distributor?" by A. C. Blaisdell, Secretary, A. E. D.; "The Equipment Distributor and the Present Construction Scene" by Colonel Willard T. Chevalier, Publishing Director, *Engineering News Record*; and "Distributors Sales—Today and Tomorrow" by William H. Ziegler, Wm. H. Ziegler Co. On Tuesday the meeting will open at 9:30 A. M. with an address by John C. Louis, John C. Louis Co., whose subject will be "The Uniform Mechanics' Lien Act," following which H. P. Gillette of the Gillette Publishing Co., will speak on "Methods of Increasing Expenditures for Public Works" and Victor L. Phillips of the Victor L. Phillips Co. will offer "Some New Thoughts on Cost Distribution and Financial Statements." Following lunch on Tuesday, the first speaker of the afternoon will be Tom Dix, President, CONTRACTORS AND ENGINEERS MONTHLY, who will speak on "Real Understanding between Manufacturers and Distributors," followed by Chas. H. McAllister, Manager, Allied Construction Industries, speaking on "Controlled Credits—the Cure for Irresponsibility" and Carl E. Baker of the Smith Booth Usher Co. and First Vice President of the A.E.D., speaking on "Salesmen's Compensation for 1933."

Speeding Up a Bay State Road Job

(Continued from page 28)

the skip hoist clutch and automatically sets the brake. The power loader skip is lowered by a hand lever, and, as it nears the ground, it closes the valve from the measuring tank into the drum and opens the one from the auxiliary tank into the measuring tank. A lever at the discharge end of the operator's platform permits the operator to disconnect all automatic operations set in motion by the raising of the power loader skip. The overhead storage tank for water has a capacity of 200 gallons which does away with loss of time waiting for water when the pressure is reduced on the hills.

This type of paver is more adapted to larger projects since it will pave about 3 miles of 10-foot width per week. The Massachusetts Department of Public Works has approved of this double-drum paver but does not approve of paving mixers working in tandem. The double-drum paver is entirely automatic, whereas tandem pavers are liable not to be as accurately controlled.

PERSONNEL

This contract was completed by Carlo Bianchi & Co., Inc., on November 23, 1932, under the personal direction of Peter M. Bianchi, President, and with Fermo A. Bianchi as Superintendent. For the State, the work was in charge of H. O. Parker, District Engineer, with John L. Day as Resident Engineer.

Building America's Roads Safely

(Continued from page 32)

our first question is "Was any one injured?" This sounds and is humanitarian. Contractors are humanitarian. But there is another aspect of the question which is also important, and perhaps has had as great an influence in bringing about safety progress,—and that is a mounting insurance rate because of one's accident record. Many companies have launched whole-heartedly into safety campaigns and found financial gain by so doing. May many more save by observing safe practices, but let us not completely forget the humanitarian side.

Post your jobs well with the fine safety posters available these days. Let the men know that you are thinking safety, and thinking it primarily for them. Gradually they will get into step. Impress upon the superintendents and foremen that they are responsible for the safety and lives of the men under them. Literature should be placed in the hands of the men, accompanied by a word or two as it is passed out at noon hour or some unhurried time. Show them some personal interest, talk about their families and their children. Cooperation will grow.

The employee who is regarded as just so much energy and force in the work to be done senses this feeling in his employer. He may work faithfully and well, partly because he is a good worker and partly because of necessity. However, efficiency in a safety program anywhere depends upon the human relationship to a far greater extent than we have been accustomed to think. When we reach the point of proper human relationships with our employees, our roads will not only be better built, and more quickly built, but they will be more safely built because of the development of pride of the worker in his task and in the undertaking of his employer. Put it on the money basis if we must; save with safety, yes, but preferably let us do it from the humanitarian standpoint and through improved human relationships; then will these other things be added unto us.

From an address before the Twenty-first Annual Safety Congress, Washington, D. C.

Contract Maintenance Adopted by New York State

MINTENANCE work in the State of New York will be done, in part at least, by the contract method, it has been announced by the highway commission. According to *The Low Bidder*, all of the retread work to be done on the State's highways will be done by contract next year and there will be about 500 miles of this type of maintenance. This decision is the result of persistent work on the part of organized contractors, who through the A. G. C., have collected information on the relative costs of different types of maintenance work when done by contract and by state forces.

Economics of Construction Management

BUILDING a road or structure of any kind is an operation requiring the coordination of machinery, materials and man power. Given these three things anybody can build, in time and after a fashion. However, to build efficiently and economically is the function of the contractor. Because of the variable natures of the original materials and equipment, coordination or management has become an involved procedure. To manage economically requires knowledge, skill, aptitude and experience. A recent book entitled "Economics of Construction Management" by J. L. Harrison, Division of Management, U. S. Bureau of Public Roads, is devoted to a discussion of the fundamentals of economics in management, taking up each problem in such a way as to indicate how to bid and how to make a profit. This book is published by the Gillette Publishing Co., Chicago, Ill., at \$3.75.

How the Other Fellow Did It

Construction Briefs

Insuring a Clean Paver Skip

197. Paver skips that are not clean are an abomination. If the cement adheres to the skip there begins an accumulation of material that slows up the speed of emptying the skip on each cycle. Scraping the skip now and then while it is on the ground is the usual way to prevent this accumulation becoming a nuisance. On one job visited recently another method was used which eliminated the need of scraping and was almost automatic. A timber was mounted above the water tank on the paver. From this a bar was suspended with a spring holding it forward toward the paver skip. When the paver operator pulled on a cord which led from the bar to the operating platform, the bar was pulled back and when he let go the springs jerked the bar forward against the skip, giving it a sufficient jar to loosen all the adhering cement or damp sand. It worked very successfully and the skip was always free from any material that would slow up the flow into the mixing drum.

23.4.6

A Well-Planned Asphalt Bucket That Prevents Splashing and Blowing

198. A construction superintendent of an ingenious turn of mind realized that there is considerable danger as well as loss of material when the asphalt, delivered by the pump from his heating kettle to the weighing bucket on the hot mix plant, either splashed as it reached the bucket or was blown about by a stiff breeze. He devised a special asphalt bucket which did away with all of this. The bucket was roughly V-shaped with the point cut off and a bottom piece welded in. At either end of the bucket were round holes plugged with cones. When the asphalt was weighed and ready to dump, a lever at the top of the bucket was dropped, raising the two cones and permitting the asphalt to run in two streams to the mixer. The large pipe from the pneumatic lift for the hot asphalt was carried well into the bucket to prevent blowing of the stream when delivering material.

23.2.66

Paying for Batch Hauling by Subcontract

199. Numerous methods have been devised to keep track of the batches hauled by a subcontractor on a concrete road job. About the simplest method which operates successfully and is practically foolproof was developed by an Ohio contractor. It consists of a double card which when folded and punched gave a record for the truck driver and a record for the general contractor. At the top of the card were twelve spaces numbered from one to twelve, representing the months, and immediately below that a series from 1 to 31 for the days. The center of the card is devoted to a series number, the rate of payment, name of the general contractor, the name of the job, the name of the truck owner and the number of the truck. Around the bottom and one side are spaces for 36 numbers, representing 36 truck loads. Above and below each number is a zero, the upper one representing the loading of the batch at the batching plant and the lower one the dumping of the batch at the paver. The weigh man at the batching plant punched the first hole for the batches and the dump man at the paver punched the card again, giving a double check. At the end of 36 loads, the truck driver turned in one-half of this card and retained the other half and received a new double card. In this way no batches strayed between the batching plant and the paver on a long haul and no mysterious concrete foundations for chicken coops or silos appeared along the right-of-way.

23.5.62

Setting Up a Job Saw Mill

200. The ordinary saw rig will handle a great many odd jobs, if the carpenter has any ingenuity. There are some electric hand saws today which perform what seems the impossible. A contractor on a tunnel job which required a lot of odd lengths of lumber and considerable form work set up a standard steel saw rig at one open end of a shed close by the lumber stockpile which was slightly to one side of the shed. On the same side a wedge shaped fence or permanent "horse" was built so that one end of each piece of lumber which was slipped from the stockpile could be rested on the horse and the other end swung around and placed on the bench at the left and then the lumber pushed forward onto the saw table. To permit lateral movement, a piece of pipe set with its ends in wood recesses with plenty of grease, furnished a convenient home-made roller which permitted the timber being moved across to cut various lengths with a minimum of effort. Where 4 x 12 and 6 x 12 lumber in 10 to 16-foot lengths was being handled, this made it possible for the carpenter and his helper to move the pieces around where ordinarily they would have needed one or two laborers to help them.

23.5.66

A Trowel with a 10-Foot Handle

201. A common scheme used by finishers of concrete roads in central Illinois, but which has not been seen generally in other sections, devised to overcome the small blemishes on the slab, such as clods of earth or laitance that have not been removed by longitudinal floats or belts, is a small trowel firmly attached to the end of a 10-foot pole, usually of bamboo. This trowel is manipulated out over the slab and the small poor spots taken out with remarkable skill and speed. The handle of a small 2 x 3 trowel is inserted in the hollow center of the bamboo pole and then wedged and bound securely.

23.3.50

Welded Pipe for Piling

202. A Midwest foundation contractor faced the problem of driving pipe piles 24 inches in diameter and 12 feet in length. At first screw couplings were considered but later he decided to weld the pipe which was fabricated from steel. The piles were driven to a depth of 72 feet with a steam pile hammer. Often after they had been driven 18 feet, they were straightened to a plummet, necessitating a considerable strain on the welds which stood up without fracturing even under 40 strokes with a 5,000-pound hammer. The pipe was fabricated from steel of $\frac{1}{2}$ -inch thickness and the longitudinal seams were welded at the rate of 36 feet an hour. The pipe was prepared for welding with a single bevel of 30 degrees. The 12-foot lengths were then fused into 36-foot sections. The pipe was given a single 30-degree bevel and placed upon a rotating fixture. The circumferential welds were made in a total time of eight minutes.

23.5.69

Sprinkling the Grade

203. Almost any laborer is assigned to sprinkling the grade ahead of a paver on hot days. He uses the usual "thumb" method to form a spray and the water is liable to spread in most any direction, intentionally or otherwise. One contractor obviated trouble from this score by using the usual $\frac{3}{4}$ -inch hose attached to the paver with a flattened piece of copper tubing wired into the hose, giving a very effective spray which spread out evenly over the grade.

23.5.63

Road Show Notes

J. D. Adams Co., Indianapolis, Ind., will have on exhibition in Space Nos. 135 and 140 the new Adams motor grader No. 301, powered by a McCormick-Deering tractor; an Adams elevating grader No. 11, a fully motorized control machine; and an Adams leaning wheel grader of the high-lift type with a 12-foot blade which has just been announced. This grader has a wide range of blade adjustments, being capable of cutting a bank $6\frac{1}{2}$ feet high at a slope of 73 degrees off horizontal as well as cutting $6\frac{1}{2}$ feet outside the line of wheels for finishing shoulders and similar work. The exhibit will be in charge of E. E. Christena, assisted by a number of company representatives.



The New Adams No. 112 Leaning Wheel Grader

Air-Maze Corp., Cleveland, Ohio, will exhibit in Space 336 its complete line of heavy-duty oil-bath type Air-Maze filters. A feature of the exhibit will be the new heavy-duty oil-bath type air filter No. 55-OB designed for the protection of all kinds of road building equipment where severe dust conditions are encountered. Representatives in charge will include W. G. Heacock, Sales Mgr.; C. R. Hall, Sales Dept.; W. L. Malotte, Michigan Rep.; and G. M. Walton, Vice Pres.



The New No. 55-OB Air Filter

Alabama Asphaltic Limestone Co., Birmingham, Ala., will occupy Space 338, exhibiting samples of asphaltic limestone hot-mix and cold-lay pavement, as well as a special cold-lay mixture developed for thin seal coats on mixed-in-place or road-mix construction. The company will be represented by Wallace L. Caldwell, Pres., and J. H. Conzelman, Gen. Mgr.

American Manganese Steel Co., Chicago Heights, Ill., will exhibit in Space Nos. 230 and 235, with A. W. Daniels, Vice Pres.; J. P. Murtaugh, Asst. to Vice Pres.; A. R. Sittig, Cleveland District Mgr.; B. S. Carr, Mgr., Pump Dept.; and P. I. Nagle, Pump Dept., in attendance. A feature of the exhibit will be the new AMSCO manganese steel renewable-lip one-piece power shovel dipper.

Amesite Asphalt Co. of America, Philadelphia, Penna., will have on exhibition in Space No. 111 samples of Amesite paving materials as well as motion pictures illustrating the handling of these materials. Those in attendance will be D. M. Hepburn, Pres.; Harlan Conly, Treas.; Perry A. Nicklin, Sales Mgr.; C. P. Elliott, Engr.; Richard Halton, Millard Hunt, Robert H. Fuller, W. H. Hall, Edward McLaughlin, George B. Carey, J. E. Cushing, C. A. Harrington, S. E. Johnson, Wm. S. Giles, Paul Townsend, Jos. M. Spears, Wayne C. Sutton, W. C. Beechold, W. G. Drummond, W. C. Witt, M. F. Bramley, M. E. Payne, B. Dolan, Harold Bramley and George Vang.

Anthony Co., Streator, Ill., will have on exhibition in Space No. 128 a Caterpillar Twenty-Five tractor equipped with an Anthony multiple tool, and the new Anthony hydraulic dump body. This multiple tool is a machine which can be used as a loader, bulldozer or a front end fresno by the easy and quick exchange of interchangeable parts. A feature of the 1933 line of Anthony dump bodies, one of which will be on exhibition, is the fact that this body can be used with all makes of chassis, regardless of the width of the frame or the location of the transmission and power take-off.

The Asphalt Institute, New York City, will occupy Space Nos. 126 to 132 inclusive and will exhibit a model showing asphalt road construction. The latest publications of the Institute will be available, including the newly simplified Specifications for Liquid Asphaltic Road Materials and Manuals No. 1 and No. 2 of the Asphalt Road Construction series, the latter on Surface Treatment Types being just off the press. Representatives of the Institute will include J. E. Pennybacker, Managing Director; Prevost Hubbard, Chemical Engr.; Bernard E. Gray, Highway Engr.; and Henry Krieger, Asst. Chemist.

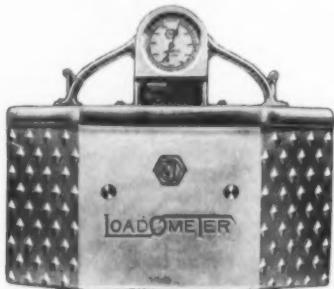
Austin-Western Road Machinery Co., Chicago, Ill., will exhibit in Space Nos. 137 and 138 its 1933 line of road building equipment. H. M. Kleiser, Vice Pres., and W. Cornwell, Mgr., Crusher and Roller Dept., will be in attendance.

Barrett Co., New York City, will have on exhibition in Space 142 roofing and building material in addition to the Tarvia and Tarvia-lithic line which is usually exhibited. Representatives of the company who will be present are P. K. Sheidler, Asst. Director of Sales; O. A. Brand, Mgr., General Tarvia Dept.; Paul Macy, Asst. Mgr., General Tarvia Dept.; George E. Martin, Consulting Engineer, all of the New York office; J. L. Lien, Mgr., Tarvia Dept., Chicago; A. D. Carpenter, Mgr., Tarvia Dept., Minneapolis; F. E. Banville, Mgr., Tarvia Dept., Columbus; and C. H. Olmstead, Mgr., Tarvia Dept., Birmingham.

Bay City Shovels, Inc., Bay City, Mich., will have on exhibition a Model B $\frac{3}{8}$ -yard-light $\frac{1}{2}$ -yard full-revolving

full-crawler mounted convertible shovel and a Bay City trailer with dual pneumatic tires.

Bendix-Westinghouse Automotive Air Brake Co., Pittsburgh, Penna., will occupy Space Nos. 301, 302 and 303 at the Road Show and will also maintain headquarters at the Book-Cadillac Hotel. R. M. Heinrichs, Gen. Mgr.; S. Johnson, Jr., Chief Engr.; R. H. Casler, Field Engr.; R. L. Morrison, District Mgr.; and A. E. Young, Rep., will be in attendance.



*The Black & Decker Loadometer
for Weighing Trucks*

Black & Decker Mfg. Co., Towson, Md., will have on display its line of portable electric tools applicable to the automotive industry and Turtle Back Loadometers, which are portable weighing devices used for weighing motor vehicles in the enforcement of weight regulations governing the operation of motor trucks on highways. The company will be represented by H. L. Prine, Testing Engr., and E. E. Powell, Mgr., Loadometer Sales.

Blaw-Knox Co., Pittsburgh, Penna., will occupy Space No. 145 and will have on exhibition models and enlarged photographs of the new line of improved Blaw-Knox Trukmixers and closed agitators, steel forms for general concrete construction, batcher plants and central mixing plants, road forms, Ord finishing machinery for concrete and asphalt pavements, Universal forms for curb and gutter, integral curb and pavement construction, clamshell buckets, the Blaw-Knox Madsen line of portable asphalt plants and Ateo dirt moving equipment, consisting of dirt movers, bulldozers and tamping rollers. The company will be represented by Chester H. Lehman, Gen. Sales Mgr. and Seey.; Edward M. Ornitz, Sales Mgr.; Arthur A. Levison, Asst. Sales Mgr.; William A. Cochrane, Asst. Sales Mgr., all of the Construction Equipment Division,



*The Improved Trukmixer and Closed Agitator Body
for Transporting Concrete*

and district managers and representatives from the various district offices of the company.

Bond Manufacturing Corp., Wilmington, Dela., will have on exhibition in Space No. 370 its Cork-Tex expansion joint, a newly developed cork expansion joint for use in concrete construction. Those in attendance will be George F. Edmonds, R. C. Bostwick and Edward K. Bispham, Jr.

Philip Carey Co., Cincinnati, Ohio, will have on exhibition in Space No. 148 Elastite premoulded expansion joint, rubber expansion joint, subgrade felt, asphalt plank and asphalt flooring. C. V. R. Fullenwider, Mgr., Elastite Products Div., will be in charge.

J. I. Case Co., Racine, Wis., will exhibit in Space No. 122 a Model LI tractor with dual pneumatic rear tires, as well as moving pictures. Those in attendance will be George W. Iverson, Sales Mgr., Industrial Div.; L. L. Hoaglin, Industrial Div.; Tolmer Nelson, Engineering Dept.; F. A. Wirt, Adv. Mgr.; M. R. Comer and J. F. Bartels, Industrial Salesmen.

Centaur Tractor Co., Greenwich, Ohio, will exhibit the Centaur highway mower in Space No. 214. C. C. Stedman, Vice Pres. in charge of Sales, and C. B. Hall, Sales Engr., will be in attendance.

Cleveland Tractor Co., Cleveland, Ohio, will have on exhibition in Space Nos. 137-A and 138-A a Cletrac 80 and



Three-Quarter Front View of the Wooldridge Standard Hydraulic Trailbuilder. The Blade Is Powered Up and Down by Single Hydraulic Control and the Horizontal Adjustments Are Afforded by Screw-Jacks at the Operator's Seat.

a Cletrac 35 with a Wooldridge Trailbuilder which will be shown in action. A feature of the exhibit will be a special apparatus embodying the features of the Cletrac steering mechanism, demonstrating the Cletrac patented differentially-controlled steering. L. D. Ogle, Sales Promotion Dept., will be in charge of the exhibit while others in attendance will be King White, Pres.; H. D. Hubbs, Asst. to Pres.; W. E. Miles, Sales Mgr., Industrial Div.; G. D. Groce, Service Mgr.; J. W. Montigney, Traffic Mgr., and D. A. Milligan, Equip. Sales Mgr.

Concrete Surfacing Machinery Co., Cincinnati, Ohio, will have on exhibition in Space No. 105 the complete line of Berg surfacing machinery. M. Wetstein, Pres.; F. E. Aurand, Sales Mgr., Cleaning Tool Div.; and M. Wolfson, Transportation Dept., will be in attendance.



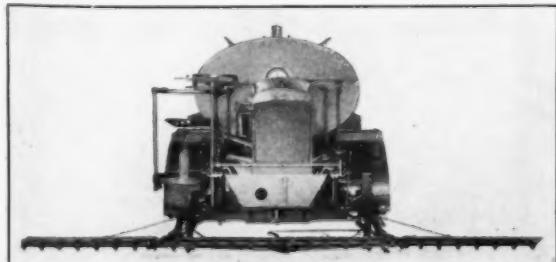
One of the Curtis Model C Portable Compressors

Curtis Pneumatic Machinery Co., St. Louis, Mo., will exhibit in Space Nos. 227 and 238 the Curtis Timken roller bearing, carbon free Model C portable compressor line, the outfit to be on display being a 240-foot portable $6\frac{1}{2}$ x $5\frac{1}{4}$ -inch four-cylinder V-type unit mounted on four steel wheels. Representatives in attendance will be J. D. Lodwick, Sales Mgr.; I. B. Lewis and R. P. Stone, Sales Engrs.

Dodge Brothers Corp., Detroit, Mich., will have on exhibition in Space No. 201 four trucks together with a complete parts display, including a Model G-30 E chassis and cab with a $1\frac{1}{2}$ -yard contractor's dump body with hydraulic hoist; a Model F-60 E chassis and cab with a 3-yard contractor's dump body and hydraulic hoist; a Model G-43 2-ton standard chassis and a Model G-80 4-ton heavy-duty chassis. Representatives in attendance will be J. D. Burke, Director of Truck Sales; Allison Miller, Asst. Director of Truck Sales; D. C. McCallum, Detroit Regional Mgr. of the Fargo Motor Corp., and G. A. Orphal, Special Equipment Sales.

Dow Chemical Co., Midland, Mich., will exhibit in Space No. 372 a display showing the uses of Dowflake calcium chloride for road maintenance and construction. Particular attention will be given to gravel roads, and the correct use of calcium chloride for maintenance work, as well as the construction and maintenance of sand-clay roads. Also the use of calcium chloride for treatment of sleet covered roads and streets to insure safe driving will be featured. Don Williams, Asst. Sales Mgr., will be in charge, with Fred Koch, Asst. Mgr., New York Office; H. Knowles, Salesman; George Hemmerick, Ontario Sales Engr.; Frank Whaley, Missouri Sales Engr.; G. F. Metcalf, Michigan Sales Engr., and V. B. Redfern, Michigan Sales Engr., also in attendance.

E. D. Etnyre & Co., Oregon, Ill., will have on exhibition in Space No. 309 movies and photographs of Etnyre equipment, featuring the latest Etnyre distributor equipped with the new circulating spray bar which is designed with a



The Etnyre Model FO2C 800-Gallon Distributor with the Circulating Spray Bar in Operating Position

valve at each nozzle to provide instantaneous action and prevent drip from the nozzles after spraying.

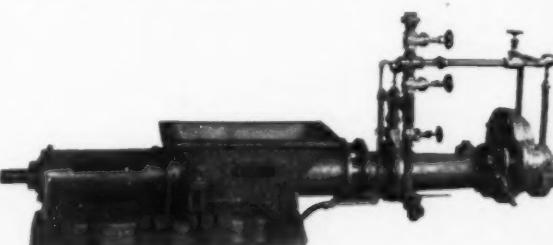
Euclid Road Machinery Co., Cleveland, Ohio, will occupy Space Nos. 117 to 120, where the following equipment will be on exhibition: the new Tu-Way 10-yard dump wagon; $1\frac{1}{2}$ -yard wheel scrapers; a 12-yard bottom-dump wagon, a 22-cubic foot rotary scraper and a Caterpillar Fifty equipped with a Euclid bulldozer. Those in attendance will be A. P. Armington, Pres. and Gen. Mgr.; E. F. Armington, Sales Mgr.; T. H. Taylor, Asst. Sales Mgr.; S. F. Armington, Chief Engr.; H. J. Zimmerman, Service Mgr.; J. K. Greer and V. D. Roland, District Reps.



The New Tu-Way Dump Wagon

Ford Motor Co., Dearborn, Mich., will have on exhibition in Space Nos. 204 to 209 a line of trucks and small commercial units.

Four Wheel Drive Auto Co., Clintonville, Wis., will occupy Space 113 where there will be on display two 1933 truck models, the H6 of 2 to $2\frac{1}{2}$ -ton capacity and the CU6 in the $3\frac{1}{2}$ to 4-ton class, and the Miller-FWD special racing car. Members of the FWD organization who will be present are: Walter A. Olen, Pres. and Gen. Mgr.; R. H. Schmidt, Gen. Sales Mgr.; H. B. Dodge, Chief Engr.; W. M. Hanson, Adv. Mgr.; R. W. Pachaly, Chicago Branch Mgr.; and H. G. Engel, District Rep.



The Fuller-Kinyon Type F Stationary Pump for Unloading Bulk Cement

Fuller Co., Catasauqua, Penna., will occupy Space Nos. 229-236 where there will be exhibited a portable Fuller-Kinyon pump for unloading box cars and barges, the new Type F stationary pump particularly designed for unloading bulk cement from hopper-bottom and tank cars and a single stage Fuller rotary air compressor, as well as photographs and movies illustrating recent construction projects.

where Fuller-Kinyon systems were used for handling the cement. The feature of the exhibit will be the new Type F pump for unloading hopper-bottom and tank cars, which may be driven by a directly connected gasoline engine or an electric motor and which, though designed for medium distance conveying, is claimed to convey cement 1,000 feet with a lift of 125 feet. G. K. Englehart, P. F. Stauffer, E. P. Meixsell and J. M. Alonso will be in attendance.

Galion Iron Works & Mfg. Co., Galion, Ohio, will have on exhibition in Spaces 136 and 139 the new Galion Chief 10-ton road roller, complete with scarifier, with the new type hydraulic operation; a No. 14 hydraulic-operated pull-type grader with the new hydraulic feature; a No. 10 hydraulic-operated pull-type grader and a Galion E-Z lift motor grader, which has hydraulic operation, double drive, eight wheels and an 8-foot stone spreader. It is expected that the following members of the organization will be in attendance: J. L. Connors, Vice Pres. and Gen. Mgr.; J. S. Boyd, Vice Pres. in charge of Sales; H. G. Hulse, Sales Mgr.; C. F. Boyd, Sales Mgr.; R. E. Boyd, Vice Pres. in charge of Production; J. X. Farrar, Adv. Mgr., and A. D. Mahoney, Asst. Adv. Mgr.

General Wheelbarrow Co., Cleveland, Ohio, will exhibit in Space No. 313 Empire highway guard rail, Empire grader blades and General wheelbarrows. J. M. Rorimer, Vice Pres., and Roger M. Kyes, 2nd Vice Pres., will represent the company.

W. S. Godwin Co., Baltimore, Md., will exhibit in Space No. 103 its line of steel paving guards for protecting the edges of streets, roads, curbs and railway paving, as well as its new safety island. W. S. Godwin, Pres., will be in charge of the exhibit.

Good Roads Machinery Corp., Kennett Square, Penna., will occupy Space No. 307 and will exhibit one of its roller bearing reduction crushers, a feature of which is the new adjustable stationary jaw which makes it readily convertible from a fine reduction crusher to a primary crusher, or vice versa. Those in attendance will be F. B. McKaig, Secy. and Treas.; W. D. Polk, Sales Mgr.; R. S. Tucker, Gen. Mgr., and M. A. King, Midwestern Rep.

Goroco Mechanical Spreader Co., Philadelphia, Penna., will have on exhibition in Space No. 339 the Goroco chip spreader and in addition a working model and moving pictures to illustrate the operation and results obtained in spreading cover on fresh oil, sand, cinders, etc., on icy highways. A. I. Dean and H. N. Bechtel, will be in attendance.

Heitzel Steel Form & Iron Co., Warren, Ohio, will be represented by its usual exhibit and a number of members of the organization.

Hercules Co., Marion, Ohio, will occupy Space No. 234 where there will be shown moving pictures illustrating Hercules equipment and featuring the Hercules Model 100 working on black top pavement. G. V. R. Mulligan, Mgr., Road Roller Sales, will be in charge of the exhibit.

Hercules Motors Corp., Canton, Ohio, will have headquarters at the Book-Cadillac Hotel with D. W. Latta, Clyde R. Schuler, W. W. Cromley, C. P. Weekes, A. B. Wehling and John Keplinger in attendance.

Hercules Products, Inc., Evansville, Ind., will have on exhibition in Space No. 217 Hercules dump bodies and the

Hercules-Ditwiler road spreader for use in road construction and maintenance, dust prevention with calcium chloride, and ice treatment. A feature of the exhibit will be the improved Model 202 heavy-duty tubeless hydraulic hoist straight-side dump body, a number of which have been purchased by State highway departments and municipalities recently.

Chas. Hvass & Co., Inc., New York City, will have on exhibition in Space No. 141 the new Hvass Retread Mixer-Leveler recently developed for low cost highway construction. Chas. T. Hvass, Pres., and B. E. Priddy will be in attendance.

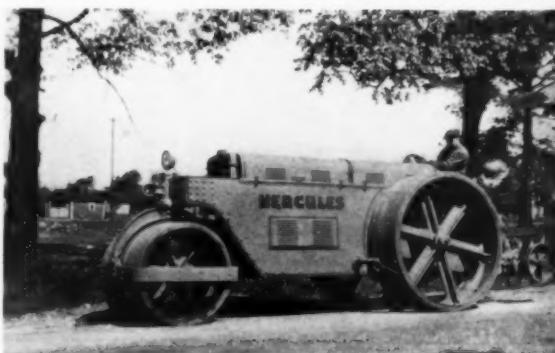
Hyatt Roller Bearing Co., Harrison, N. J., will have an exhibit in Space 243 where the following members of the organization will be in attendance: H. K. Porter, Gen. Sales Mgr.; O. W. Young, Chief Engr.; H. M. Carroll, Adv. Mgr.; C. L. Newby, Divisional Mgr., Chicago; J. M. Kelly, Divisional Mgr., Pittsburgh; L. F. Stuebe, T. R. Russell, L. L. Hill and Frank Webster, Sales Engrs. This company will also have headquarters at the Statler Hotel.

International Harvester Co. of America, Chicago, Ill., will have on exhibition in Space Nos. 116 to 121 the Model A-7 heavy-duty International motor truck with dump body, the new T-40 TracTracTor, the McCormick-Deering 1-30 industrial tractor and a special cut-away display of the final drive of the T-20 TracTracTor. A feature of the exhibit will be the T-40 TracTracTor, which has recently been developed, and which is powered by a 6-cylinder engine and has a five-speed transmission. T. B. Hale and W. M. Parrish will be in charge of the exhibit.

Iowa Manufacturing Co., Cedar Rapids, Iowa, will have on exhibition in Space 112 the Cedar Rapids traveling-plant road-mix machine, a straight line one-piece gravel plant and batch-type pre-mix plants. Howard Hall, Pres.; Kenneth Lindsay, Vice Pres. and Sales Mgr.; J. D. Aldrich, District Sales Mgr., and A. C. Gossard, Asst. Sales Mgr., will be in attendance.

Jaeger Machine Co., Columbus, Ohio, will share Space No. 144 with the Lakewood Engineering Co., where there will be a moving picture exhibit showing the application of truck mixers and in particular the application of the mechanical spreader to paving work. O. G. Mandt, Vice Pres. and Gen. Mgr., will represent the Jaeger Machine Co.

Killefer Manufacturing Co., Los Angeles, Calif., will occupy Space Nos. 125 and 133 where there will be a



A Model 100 Hercules Roller Working on Black Top

HELTZEL

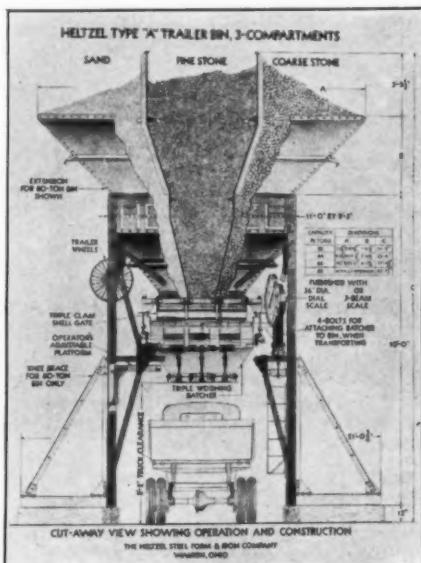
MORE—AND—MORE

**Contractors and Engineers are depending on
Heltzel Equipment to see them successfully
★ THROUGH—1933 ★**

HELTZEL PRODUCTS

STEEL FORMS—For building Roads, Curbs, Gutter and Sidewalks. STEEL BINS—Portable Batching Plants, Cement Bins, Central Mixing Plants, Rectangular, Square or Circular Bolted Bins, Batchers and Scales. Mechanical Spreader and Surfacer, Road Joint Installing Machines, Finishing Tools and Miscellaneous Equipment. Special Forms for Manhole, Sewer and Tunnel.

HELTZEL STEEL PORTABLE BINS For Handling and Batching Concrete Aggregates



Heltzel 26 to 180-ton Batching Plants



Heltzel 50 to 335-bbl. Bulk Cement Plants

It pays—to protect your job with genuine—Heltzel Steel Road Forms



More contractors purchased Heltzel Equipment in 1932 than in any previous years.

**THE HELTZEL STEEL FORM & IRON CO., WARREN, OHIO
1933 ROAD SHOW—BOOTH NO. 211**

Write for Descriptive Pamphlet

Killefer road disc or planer, a No. 10-A road ripper, a No. 67 revolving scraper, a No. 842-H hydraulic wheel scraper and a revolving self-cleaning road ripper on exhibition. C. G. Wuthrich, Eastern Rep., will be in charge assisted by H. W. Scharber, Southeastern Rep., R. T. White, Mgr., Peoria Branch, and O. P. Robb, Vice Pres.

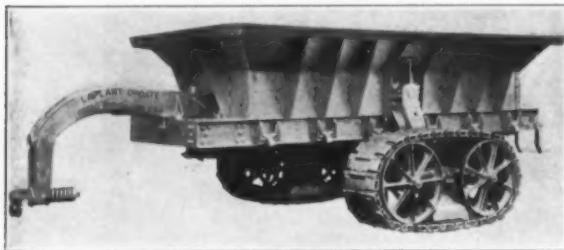
Kinney Manufacturing Co., Boston, Mass., will occupy Space 106 and will show moving pictures demonstrating Kinney distributors in action, especially on penetration construction with coarse type aggregate, as used in Massachusetts. Those in attendance will be H. G. Saunders, Mgr., Kansas City Office; A. J. Munday, Mgr., Chicago Office; C. C. Hill, Salesman; C. D. Campbell, Jr., Mgr., Philadelphia Office, and W. E. Worcester, Vice Pres. in charge of Sales.

Koppers Products Co., Pittsburgh, Penn., will demonstrate the various qualities and uses of Tarmac in Space No. 146. P. L. Griffiths and S. H. Scott will represent the company.

La Bour Co., Inc., Elkhart, Ind., will have on exhibition in Space No. 141-A a La Bour self-priming centrifugal pump in actual operation and some of the gasoline-engine-driven portable pumps for contractors' service. H. E. La Bour, Pres., and William A. Da Lee, Detroit Rep., will be in attendance.

Lakewood Engineering Co., Columbus, Ohio, will share Space No. 144 with the Jaeger Machine Co., where there will be on exhibition the Lakewood form tamper, a new device which rides the road rail and tamps the material on each side of the form. Lion Gardiner, Pres., will be in attendance.

Lancaster Iron Works, Lancaster, Penna., will exhibit in Space No. 362 one of the new Lancierick counter current rapid batch mixers. George A. Pockels, Sales Rep. for Illinois and Michigan, will be in attendance.



The New 12-Yard Roadlayer Wagon

LaPlant-Choate Mfg. Co., Cedar Rapids, Iowa, will have on exhibition in Space No. 143 a LaPlant-Choate bottomless scraper, a bulldozer mounted on a Caterpillar Thirty-Five and a two-way dump wagon. R. E. Choate, Pres., and H. W. Graves, Vice Pres., will be in attendance.

LeRoi Co., Milwaukee, Wis., will occupy Space No. 115 where there will be exhibited a 235-foot LeRoi-Rix portable air compressor, as well as a 4-cylinder 2½ x 3½-inch gasoline power unit. Members of the organization who will be present are C. W. Pendock, Pres.; P. W. Ells, Asst. to Pres.; W. R. Karll, Sales Mgr.; and T. S. Tuttle, Asst. Sales Mgr.

A. Leschen & Sons Rope Co., St. Louis, Mo., will have on exhibition in Space No. 244 samples of the different types and constructions of Hercules Red-Strand wire rope de-

signed for use on practically all types of road building equipment. E. J. Schillinger, E. E. Hickok and Arnold Walters will be in attendance.

Littleford Bros., Cincinnati, Ohio, will have on display in Space No. 129 a number of large photographs showing the features of the Littleford pressure distributor. L. W. Glaser, Sales Mgr., Road Equip. Div., and Herbert Haupt, Engr., will be in attendance.

Lufkin Rule Co., Saginaw, Mich., will have on exhibition in Space No. 149 its line of steel and woven tapes and rules of various kinds for engineering construction work. R. M. Benjamin will be in charge of the exhibit.

Macasphalt Corp. of America, New York City, will occupy Space No. 147 where there will be on display samples of Macasphalt pavement. William P. McDonald, Pres.; O. H. Berger, Chemist; W. R. Yoakley, and John L. McDonald will be in attendance.

Macwhyte Co., Kenosha, Wis., will occupy Space No. 238 where the various types of wire rope for construction equipment will be on display. A feature of the exhibit will be a demonstration of a special lubricant recently developed by this company for wire rope.

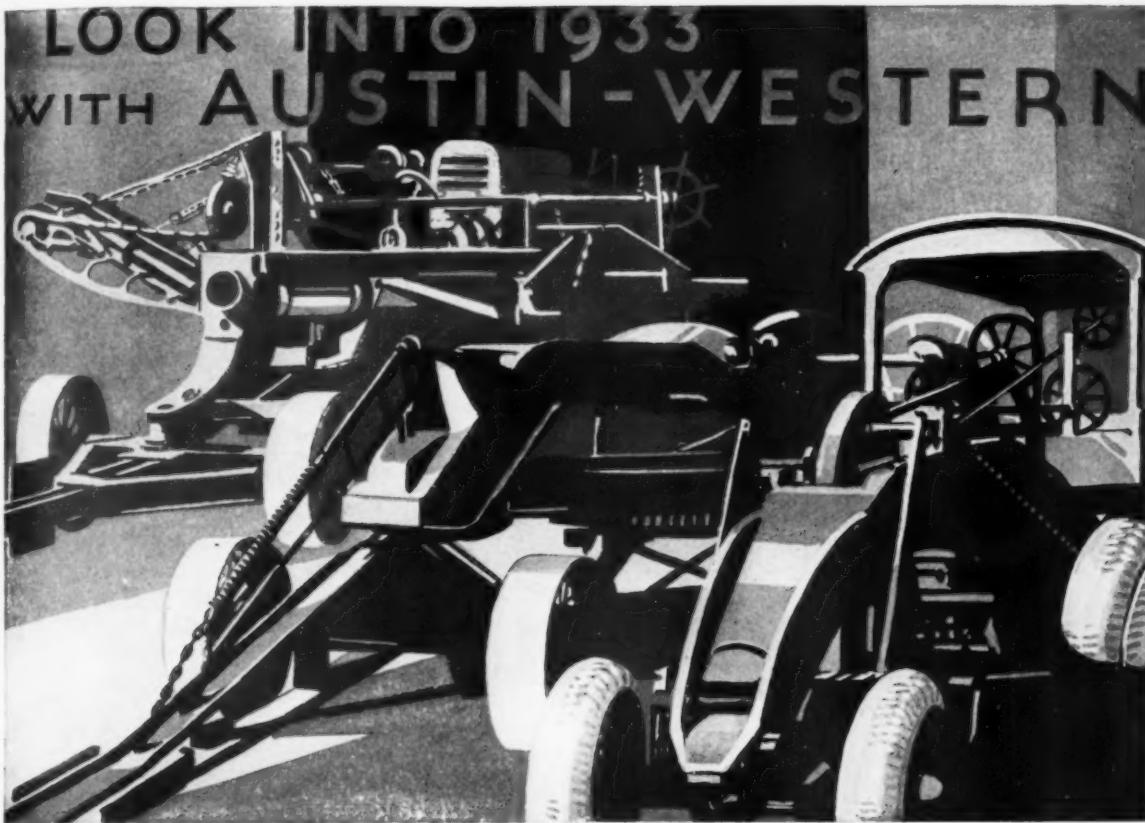
National Carbide Sales Corp., New York City, will have on display at Space No. 226 the improved National Carbide V-G Handy-Light which has been redesigned to improve stability and appearance. More than 75 per cent of the weight of this light is in the bottom so that it is not easily tipped over but if it should be, no harm can be done, and it will produce 1,500 candle power for 5 hours on only 1½ pounds of National 14 N. D. carbide, which will also be on display. R. C. Holecomb, Service Mgr., will be in charge of the exhibit.



A Handy Light for Night Work

National Paving Brick Association, Washington, D. C., will occupy Space No. 104, the main feature of the exhibit being a miniature auger machine for making brick. G. F. Schlesinger, Chief Engineer and Managing Director, will represent the Association, with Quiney A. Campbell also in attendance at the booth.

Tinius Olsen Testing Machine Co., Philadelphia, Penna., will exhibit for the first time the new Olsen hydraulic testing machine, 60,000 pounds capacity, and the Olsen-Smith Autographic, for use with this machine for making stress-strain diagrams, as well as the Olsen-Andrew road surface rater, with the Olsen master straight edge; a concrete beam tester in conjunction with collapsible moulds for preparing specimens; the latest automatic shot-type cement tester with dual weighing system; a duotility tester with Autographic; the Olsen-Mohr portable Brinell tester and the Firth Hardometer equipment for testing thin specimens; and the new Olsen-Nardiello capper for capping concrete test cylinders. This exhibit in Space No. 107 will be under the supervision of B. L. Lewis, T. L. Richards, C. R. Tait, and B. E. Ohlson.



NEW Equipment with NEW Improvements for NEW LOW COST Operation



ROAD SHOW
See our exhibits
at the Highway
& Building Con-
gress, Detroit,
January 16 to 20

Not just new models! The problems of 1933 are not to be solved by compromises with past practices.

Drawing to the full extent, upon the resources of 75 years of leadership—Austin-Western has achieved advances that make possible a new era of LOWER COSTS in road building and maintenance.

Months of engineering develop-

ment, grueling operating tests, and finally costly factory retooling—have all been undertaken with confidence that a solution to present-day economic demands could be attained.

These important developments can save you money in 1933, or make your money go farther. Write for full information to be released shortly.

The Austin-Western ROAD MACHINERY CO.

ROAD ROLLERS, CRUSHING & SCREENING PLANTS, SCARIFIERS,
SWEEPERS & SPRINKLERS, ROAD GRADERS, ELEVATING GRADERS.



MOTOR GRADERS, PLOWS & SCRAPERS, BITUMINOUS DISTRIBUTORS,
DRAGS, SHOVELS & CRANES, DUMP WAGONS, SNOW PLOWS.

Home Office, 400 N. Michigan Ave., Chicago—Branches in principal cities.

Pioneer Gravel Equipment Mfg. Co., Minneapolis, Minn., will occupy Space No. 304 where a moving picture, "Producing Washed Concrete Aggregate" will be shown. W. H. F. Thompson, Vice Pres. and Gen. Mgr.; Lewis W. Yerk, Secy.; J. A. Hanratty, Vice Pres. and Sales Mgr.; O. J. Ellerton, Asst. Secy. and Treas.; and C. K. Ordway, Eastern Field Rep., will be in attendance.

Portland Cement Association, Chicago, Ill., will have an exhibit in Space No. 150 depicting the use of concrete for main routes, secondary roads, streets, sewage disposal facilities and concrete pavement at airports, with special emphasis upon the construction of cement-bound macadam for secondary roads. E. M. Fleming, Mgr., Highway and Municipal Bureau; W. F. Tempest and M. D. Catton will be in attendance.

Ransome Concrete Machinery Co., Dunellen, N. J., will occupy Space No. 340 where the following members of the organization will be in attendance: W. Muller, Pres.; H. C. Peters, Midwest Mgr.; A. P. Robinson, Sales Mgr.; and R. M. McLean, Vice Pres. and Sales Mgr., Transit Mixers, Inc.



Rex-Watson Tractor-Hitch Wagon Carrying a Load

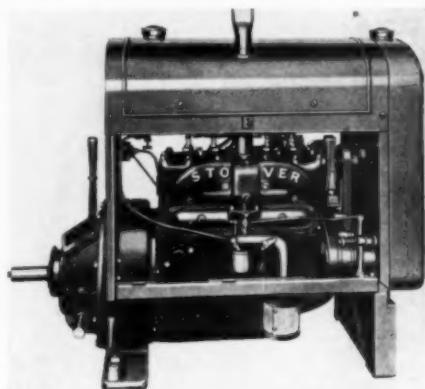
Rex-Watson Corp., Canastota, N. Y., will exhibit the Watson dumper in Space 123. Those in attendance will be S. E. Ackerman, Sales Mgr., and Frederick Heath, Jr., Sales Engr.

Sauerman Bros., Chicago, Ill., will exhibit in Space 233 a 2½-cubic yard Crescent hydraulic scraper for operation at the drawbar of a tractor, and will represent other Sauerman equipment with complete working models. The scraper is a new product which will be shown for the first time at the Road Show. Representatives at the booth will be L. E. Dierks, G. H. Tompkins, J. L. Nellis, J. N. Schneidreider and D. D. Guilfoil.

Skinner Motors, Inc., Detroit, Mich., will have on exhibition in Space 371 three models of Skinner oil reclaiming systems. Those in attendance will be Walter S. Vance, Frank W. Brazel, Paul Williams, P. C. Walrath, James H. Skinner and A. D. Redner.

Solvay Sales Corp., New York City, will have an exhibit in Space No. 208, calling attention to the various uses of calcium chloride and featuring particularly its use mixed with sand or cinders as an economical measure of safety on icy pavements. Those in attendance will be G. H. Kimber, H. C. Todd, R. A. Scott, G. P. Spencer,

from the New York Office; F. L. Damon, F. G. Calkin, Syracuse Office; C. M. Adams, Jr., Boston Office; Wm. L. Ridpath, K. M. Dillabough, Philadelphia Office; V. R. Ewing, Chicago Office; C. A. Kleinhans, Cincinnati Office; G. E. Connell, Cleveland Office; R. M. Hoyt, Pittsburgh Office; F. H. Harris, A. Phillips, Jr., G. H. Baldwin, Detroit Office; and G. C. Schroeder, Grand Rapids Office.



The New Stover 4-Cylinder Power Unit

Stover Manufacturing & Engine Co., Freeport, Ill., will have on exhibition in Space No. 130 the new Stover 4-cylinder power unit, which has a horsepower range from 10 to 16, and is simple and compact. Lee Madden, Vice Pres., and B. E. Avery, Asst. Sales Mgr., will be in attendance.

Timken Roller Bearing Co., Canton, Ohio, will exhibit in Space No. 247 its line of Timken bearings. Those in attendance will be L. M. Klinedinst, Vice Pres.; W. B. Moore, Sales Mgr., Industrial Div.; S. M. Weekstein, Industrial Equip. Engr.; H. V. Fleming, W. F. Anderson, and G. W. Curtis, District Managers.

Toledo Scale Co., Concrete Aggregate Div., Washington, D. C., will occupy Space No. 241 and will have on exhibition a Toledo moisture determination and compensation Auto-Gage, a remote indication Auto-Gage, a graphic recording attachment, automatic liquid control equipment with automatic tare mechanism and continuous motion pictures of installations of the Toledo method of proportioning concrete aggregates by weight. Colonel Sidney F. Mashbir, Director, Concrete Aggregate Div., and R. B. Longmate, Zone Engr., Concrete Aggregate Div., will be in attendance.



The Working Model of the Sauerman Tautline Conveying Cableway on Exhibition at the Sauerman Booth

Calkin,
V. L.
V. R.
Office;
sburgh
Detroit



Views of the new Mt. Vernon Memorial Boulevard connecting the nation's Capital with the home of Washington. Contractors: Roberts Paving Company, Salisbury, Md., and McDougald Construction Company, Atlanta, Ga. Carey Elastite Expansion Joint used throughout—supplied by Asbestos Covering & Roofing Co., Washington, D.C.

ll., will
over 4-
ge from
n, Vice
be in

hibit in
e in at-
Moore,
ustrial
G. W.

*TRADE
MARK REGD U.S. PATENT OFFICE*

**Carey
Elastite**

Expansion Joint



“Makes Good Paving Better”

For over 20 years Carey Elastite Expansion Joint has been protecting concrete highways against expansion and contraction stresses. Engineers specify it to insure definite results—road builders know that it is stocked in all principal centers, insuring prompt delivery.

1933 price list and trade discounts will be sent on request.

THE PHILIP CAREY COMPANY • Lockland, Cincinnati, Ohio
BRANCHES IN PRINCIPAL CITIES

BUILT-UP ROOFS
ASPHALT PRODUCTS
ELASTITE EXPANSION JOINT
WATERPROOFINGS
ROOF PAINTS

Carey
PRODUCTS
ESTD 1873

HEAT INSULATIONS
ASBESTOS MATERIALS
CORRUGATED ASBESTOS SIDING
ASFALTSLATE SHINGLES
ROLL ROOFINGS



A New 10-13-Yard Crawler Wagon

Trackson Co., Milwaukee, Wis., will have on exhibition in Space No. 110 the new 1933 model Trackson 10 to 13-yard bottom-dump crawler wagon. L. E. Dauer, Sales Mgr., and R. D. Houghton will be in attendance.

Tuthill Spring Co., Chicago, Ill., will have on exhibition in Space No. 361 a full size section of the Tuthill spring steel guard rail. Martin Kidder will be in charge of the exhibit with C. W. Miller and H. T. Moore also in attendance.

Universal Crusher Co., Cedar Rapids, Iowa, will have an exhibit of its equipment at Space No. 242 and also Booth 43 at the Book-Cadillac Hotel.

Warren Brothers Co., Boston, Mass., will have on exhibition in Space No. 373 samples of Penolithic non-skid pavement. Roy F. Williams and W. L. Kirkland will be in attendance.

Barber-Greene Co., Aurora, Ill., will have on exhibition in Space Nos. 206 and 207 movies showing the details and experiences of the Barber-Greene bituminous paver and finisher, showing the units working together as well as jobs where only the paver was used and a job where only the finisher was used, being fed by trucks. Other movies and photographs will show other B-G machines in operation, including ditchers, loaders, and conveyors.

Vitrified Paving Brick Simplified Practice Continued

THE revised simplified practice recommendation Number 1-32, covering vitrified paving brick, has been accorded the required degree of acceptance by all interests in the industry, according to an announcement by the Division of Simplified Practice of the Bureau of Standards, Department of Commerce. In the revised schedule, which was prompted by the results of a survey conducted by the standing committee of the industry, the 4 x 3 x 8½-inch vertical fibre lug brick has been included and the 3½ x 4 x 8½-inch vertical fiber lugless brick has been eliminated. The former size represents 22.6 per cent of the 1931 shipments of vitrified paving brick, while the latter averaged, during the past four years, less than 3 per cent. With these changes the new list of six recognized stock varieties will cover 75.9 per cent of the total shipments as compared with 56.1 per cent for the previous list.

Welding on Subway Construction

The savings realized through the use of electric welding on the new Independent Subway System, New York City, will be discussed and the methods used described in an article scheduled for publication in the February issue of CONTRACTORS AND ENGINEERS MONTHLY.

Construction Industry News

LaPlant-Choate Mfg. Co., Inc., Cedar Rapid, Iowa, has announced the completion of negotiations with the Knapp Mfg. Co., Oakland, Calif., for the joint manufacture and sale of the earth moving products of each company. The Knapp company will handle distribution for all products of both companies on the Pacific Coast, while the sales and distribution in the middle west and east will be handled by the LaPlant-Choate Co. These companies will now market a complete line of earth moving products including bulldozers, scrapers, wagons, backfillers, road builders, tampers, ripper plows and pull scoops. The LaPlant-Choate Mfg. Co. will make the Knapp scraper in four sizes for use with the Caterpillar Thirty-Five, Fifty, Sixty-Five and Seventy.

Rawlplug Co., Inc., New York City, manufacturer of screw anchors and holding devices, has recently announced the removal of its Cleveland office and warehouse from 2032 East 22nd Street to larger quarters at 1315 West 6th Street. Here the Cleveland branch office will continue to operate as in the past, carrying a complete line of Rawlplug products and providing truck delivery to all parts of the Cleveland territory.

Central Iron & Steel Co., Harrisburg, Pa., has announced that, effective January 1, 1933, I. M. Smith became Advertising Manager of the company with headquarters in the principal offices at Harrisburg, Pa.

Keller Tractor & Equipment Co., Detroit, Mich., has recently been appointed exclusive distributor for Bucyrus-Erie shovels, cranes and dragline machines; Blaw-Knox buckets, bins, batchers, forms and finishing machines; and Baker Mfg. Co.'s scrapers and snow plows, in the lower peninsula of Michigan.

Wm. H. Ziegler Co., Inc., Minneapolis, Minn., has announced consolidation with the General Tractor & Equipment Co., the new company name being the same as heretofore, Wm. H. Ziegler Co., Inc.

Cotton Fabric for Road Building

COTTON fabric in road building has progressed from the stage of tests to major construction in a new 2½-mile section of cotton surfaced highway recently completed near Baton Rouge, La. This new road bed was laid on a base composed of sand, gravel and clay. After preliminary grading, an asphaltic coating was applied, rolled, another coat of asphaltic material applied and then the cotton fabric laid. This was an open weave fabric weighing approximately 4½ ounces per square yard. An asphaltic coating was applied over the fabric, road surfacing material was spread, and rolled. Later, a final top dressing of asphaltic oil and sand was laid and rolled.

In this type of construction, the cotton fabric forms a waterproof cover over the road bed, acts as a binder and gives added strength to the paving material and prevents raveling at the edges of the road. Cotton fabric is being used experimentally on a 600-foot section of dirt road in Louisiana to test the practicability in service of a cotton fabric binder and top surfacing applied directly to the base. In this case, the base was merely graded and leveled before application of other materials, at a saving of 8 cents per square yard by the elimination of customary additional preparation.

"The most ubiquitous equipment at Hoover Dam"

WRITES SIX COMPANIES, INC.



FOURTEEN versatile "Caterpillar" Tractors hustle along important construction details for the builders of Hoover Dam. Their power, stamina, and traction come in handy at bulldozing shelves along rocky grades. They maneuver nimbly in close quarters to move and spot heavy equipment. They reach over cliffs with hoist and cable to transfer loads quickly and cheaply. After a flood, their broad, sure-treading tracks walked right over the silt and trash. And they speedily cleared away the debris from a diversion tunnel to save important time and money! "Equipped with a variety of appliances and apparatus and doing a multitude of jobs, 'Caterpillar' Tractors are undoubtedly the most ubiquitous equipment here," writes Six Companies, Inc.!

CATERPILLAR TRACTOR CO., PEORIA, ILL., U.S.A.

Track-type Tractors Combines Road Machinery

(*There's a "Caterpillar" Dealer Near You*)

Prices—f. o. b. Peoria, Illinois

FIFTEEN . . .	\$1100	THIRTY-FIVE . . .	\$2400
TWENTY . . .	\$1450	FIFTY . . .	\$3675
TWENTY-FIVE . . .	\$1900	SIXTY-FIVE . . .	\$3850
DIESEL . . .			\$6500

CATERPILLAR

REG. U. S. PAT. OFF.

TRACTOR

These Catalogs
Are for Free
Distribution to
Contractors.

NEW EQUIPMENT BRINGS PROFITS READ THESE CATALOGS

Check These Lists
Each Month and
Write for Cata-
logs You Need.

A New Method of Handling Bulk Cement

150 Sprout, Waldron & Co., 1260 Sherman St., Muncy, Penna., will be glad to send to those interested complete information on its method of handling bulk cement which consists of a combination of horizontal and vertical screws, the horizontal screw extending under the tracks for unloading cement from hopper or box cars, and the vertical screw conveying it to the storage bin.

A New Type of Dump Wagon

151 Rex-Wasco Corp., Canastota, N. Y., will be glad to send to interested contractors complete information in regard to the new Rex-Wasco Tractor Hitch dump wagon which is made in a variety of sizes for use with an make of industrial tractor, either singly or in tandem, and which is equipped with steel or Goodrich Zero-Pressure tires.

Trucks for Contractors

152 White Co., Cleveland, Ohio, will be glad to send full information and the name of the dealer near you for four well-known line of trucks: White, Studebaker, Pierce-Arrow and Indiana, which offer a complete range of models, sizes, and prices to meet the various requirements of the construction industry.

Expansion Joints for Concrete Paving

153 Complete information on the Carey Elastite expansion joint for protecting concrete pavement from expansion and contraction stresses may be secured by interested contractors and engineers from the Philip Carey Co., Lockland, Cincinnati, Ohio.

Lights for Night Work

154 The National Carbide V-G Handy Light, No. Y-199, which has recently been improved and the base redesigned to increase stability and appearance and which produces 1,500 candle power for 5 hours on only 1½ pounds of National 14 N D carbide, is described in literature which the National Carbide Sales Corp., Lincoln Bldg., New York City, will be glad to send on request.

Removing Irregularities from Concrete Surfaces

155 The Hill surfaicer which is designed to remove the bumps and irregularities from concrete and bituminous concrete pavements and which has a number of features which make for ease of operation and long life is described in literature which the H & H Manufacturing Co., Elyria, Ohio, will be glad to send on request.

A New Primary Crusher and Bucket Elevator Unit

156 The Pioneer Gravel Equipment Mfg. Co., Minneapolis, Minn., has announced the Pioneer Type H truck with primary crusher and bucket elevator, particularly designed for crushing caliche and other materials of a similar nature that require machinery capable of handling a large volume of materials per hour.

A New 28-Horsepower Track Tractor

157 The Model M tractor following the general design of the Model 35 and Model L and which weighs 6,200 pounds, has track shoes 12 inches in width, has four speeds forward and many other features of interest, is described in the latest bulletin and specifications which may be secured from the Allis-Chalmers Mfg. Co., Tractor Div., Milwaukee, Wis.

A New Half-Yard Excavator

158 Bucyrus-Erie Co., South Milwaukee, Wis., will be glad to send to interested contractors literature describing its new ½-yard excavator, known as the 16-B, which combines greater digging ability per pound of weight.

A New Large Bottom-Dump Crawler Wagon

159 A new circular, Form No. 323, describing the Trackson 10-13-yard bottom-dump crawler wagon which is equipped with the new 20-25-ton Trackson crawler wheels and was designed for greater hauling capacity, may be secured by those interested from the Trackson Co., 1323 So. First St., Milwaukee, Wis.

A Steam Jacketed Asphalt Pump

160 Literature describing the Kinney steam-jacketed pump for unloading asphalt or other bituminous materials from tank cars may be secured by interested contractors from the Kinney Manufacturing Co., Boston, Mass.

Arc Welding Data

161 A 20-page illustrated leaflet describing the features, characteristics and applications of the Westinghouse Flex-Arc welders may be secured by interested contractors and engineers by writing to the Westinghouse Electric & Mfg. Co., East Pittsburgh, Penna., and requesting Arc Welding Data Bulletin No. 16.

A Convertible One-Half-Yard Shovel

162 The Speeder B-3, a fully-revolving, fully-convertible gasoline ½-yard shovel, among the features of which are two speeds on all operations, in traveling, on the drums and in swinging; the independent cable crowd and automatic adjustment of the crowd cables when the boom is raised or lowered, is described and illustrated in literature which the Speeder Machinery Corp., 1201 South Sixth St., West, Cedar Rapids, Iowa, will be glad to send on request.

Pumps for Contractors

163 The complete line of C. H. & E. Mud-Hen diaphragm, centrifugal and force pumps, which are designed for the various services required by the construction industry, is described in literature which C. H. & E. Manufacturing Co., Inc., 120 East Mineral St., Milwaukee, Wis., will be glad to send on request.

Angle Compound Air Compressors

164 Sullivan Machinery Corp., 400 North Michigan Ave., Chicago, Ill., will be glad to send to those interested copies of its new Catalog No. 88-A, which describes and illustrates the new Sullivan angle compound air compressors for stationary installations.

A Surfacing for Concrete Roads and Pavements

165 Con-Tex, a free-flowing quick-drying liquid easily applied to the surface of fresh concrete, either portland cement concrete or any concrete containing quick-hardening cement, for the purpose of producing a more attractive and longer-wearing surface, is described in Bulletin No. 4 which may be secured from the Concrete Surface Corp., 342 Madison Ave., New York City.

Steam Rollers for Macadam Roads

166 Barber Asphalt Co., Iroquois Sales Dept., 1600 Arch St., Philadelphia, Penna., will be glad to send to interested contractors its literature describing and giving the specifications of Iroquois macadam rollers which are equipped with a vertical boiler and are designed for heavy-duty service.

Six-Cylinder Trucks of 1½ to 2½-Ton Capacities

167 Atterbury trucks, of 1½, 2 and 2½-ton capacities, which are designed for heavy duty and long life, are described and illustrated in literature which the Atterbury Motor Car Co., 342 Madison Ave., New York City, will be glad to send on request.

SEND THIS BACK - WE WILL DO THE REST

CONTRACTORS AND ENGINEERS MONTHLY
470 Fourth Avenue, New York

Gentlemen: Please send me the following literature, without cost or obligation

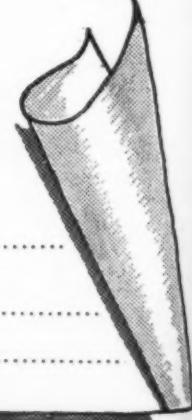
(Indicate by numbers)

Name Firm Name

Address

(Street and Number)

(City and State)



STANDARD

SONONY BRAND

ASPHALT PRODUCTS

Standard Cut-Back Surfacing Asphalt.

Standard Asphalt Binder A for surface treatment.

Standard Asphalt Binders B & C for penetration work (Asphalt Macadam).

Standard Paving Asphalt 51-60 and 61-70 Penetration for the mixing method (Asphaltic Concrete).

Standard Cold Patch Asphalt for all types of patching.

Standard Refined Asphalt for sheet asphalt paving.

Standard Asphalt Joint Fillers.

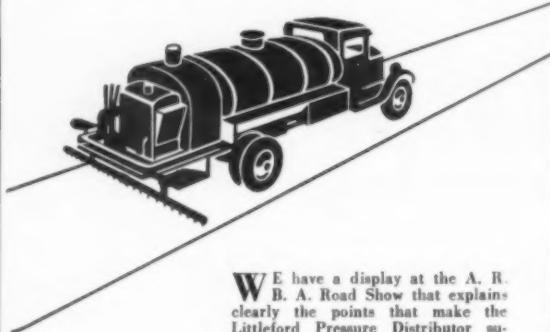
Standard Waterproofing Asphalt.

Specifications and all other particulars furnished on request.



STANDARD OIL COMPANY OF NEW YORK, INC... A SONONY-VACUUM COMPANY... 26 Broadway

What's Superior about this Distributor



Look for this Sign at the Road Show Booth No. 129



WE have a display at the A. R. B. A. Road Show that explains clearly the points that make the Littleford Pressure Distributor superior. Look for our booth under the LB sign and let us tell you why this Distributor heats bitumen faster and prevents cold weather delays. If you can't attend the Road Show, write to us for complete information.

LITTLEFORD BROS.
485 E. Pearl St., Cincinnati, Ohio

Cut your haulage costs!

Get the facts — and let the facts decide.

In Space 123 at the Road Show
REX-WATSON CORPORATION, CANASTOTA, N. Y.



Use this Orange Peel for digging compact, heavy and hard-to-penetrate materials, such as clay, dense sand, large gravel and rocky soil.

THE HAYWARD CO.
32-36 Dey St., New York
N. Y.

Hayward Buckets

During January we hope you will remember to mention CONTRACTORS AND ENGINEERS MONTHLY

New Equipment Brings Profits

(Continued from page 50)

A Portable Diesel Power Unit

168 Bulletin No. 126 describing the Superior portable diesel power unit for rock crushers, concrete mixers, sand and gravel plants, dredge pumps, air compressors and similar equipment in several models and horse-power ratings, may be secured by interested contractors from the Superior Engine Co., Springfield, Ohio.

Dump Truck Bodies and Hoists

169 Stewart dump truck bodies and hoists in capacities of from 1 to 7 tons for road building, road maintenance, and general hauling requirements are described in literature which the Stewart Motor Corp., Buffalo, N. Y., will be glad to send on request.

Automatic Impulse Starters

170 Apollo Magneto Corp., Kingston, N. Y., will be glad to send to interested contractors its literature on Apollo automatic impulse starters, a device for securing easy starting of magneto-equipped engines.

Contractors' Rubber Goods

171 Goodall Rubber Co., Inc., Philadelphia, Penna., will be glad to send to those interested its literature describing its complete line of contractors' rubber goods, including various types and sizes of hose for air and water, couplings, concrete placing hose, rubber boots, oiled clothing and similar equipment.

Sand, Gravel and Rock Pumps

172 The Byron Jackson sand, gravel and rock pump, which is of rugged construction and especially designed to meet the severe demands of such service, is described and illustrated in Bulletin No. 322 which the Byron Jackson Co., Berkeley, Calif., will be glad to send on request.

A Complete Line of Contractors' Equipment

173 Literature describing the Worthington line of contractors' equipment, including rock hammers and drills, pavement breakers, diggers, tampers, portable, semi-portable and stationary air compressors, power pumps and accessories, may be secured by interested contractors from Worthington Pump & Machinery Corp., Harrison, N. J.

Leaning Wheel Graders

174 The Rome High-Lift leaning-wheel grader, features of which are durability, ruggedness, efficiency, and ease of operation, is described in literature which the Rome Manufacturing Co., Grader Dept., Rome, N. Y., will be glad to send on request.

Tractors for Heavy Duty

175 Linn tractors which are designed for heavy duty and difficult working conditions are described and illustrated in literature which the Linn Mfg. Corp., Morris, N. Y., will be glad to send to interested contractors on request.

A High-Pressure Road Pump

176 The Humdinger self-lubricating high-pressure triplex road pump for road builders and general contractors requiring a portable water supply plant is described in literature which the Ralph B. Carter Co., Hackensack, N. J., will be glad to send on request.

Trough Conveyors for Stone, Sand and Gravel

177 Porta trough conveyors for handling crushed stone, sand, gravel and similar materials, which are made with belt widths of 18 inches and lengths of 20, 25, 30, 35 and 40 feet, are described in literature which the Portable Machinery Co., York, Penna., will be glad to send on request.

Emulsified Asphalts for Various Purposes

178 Bulletin 1860 containing condensed specifications, chemical and physical properties and general instructions for the application of Headley emulsified asphalts for waterproofing, coating and cementing, and bonding may be secured by those interested from the Headley Emulsified Products Co., Franklin Trust Bldg., Philadelphia, Penna.

A Durable Grab Bucket

179 The Mead-Morrison Type MSD grab bucket, features of which are large diameter shafts, positive separation of inside and outside hinges, large oil reservoir, heavy plate shell, high carbon steel jaw 12 inches in width and high carbon heat-treated forged steel teeth, is described in Bulletin 133 which the Mead-Morrison Mfg. Co., 125 Prescott St., Boston, Mass., will be glad to send on request.

Wheelbarrows and Concrete Carts

180 The complete line of Jackson pressed steel tray wheelbarrows for contractors' use, with both wood and metal frames and in various sizes, styles and capacities, as well as Jackson concrete carts, is described in literature which the Jackson Mfg. Co., Harrisburg, Penna., will be glad to send on request.

A New Tire for Tractor Service

181 Complete information on a new tire for tractor service, a pneumatic companion to the Goodrich Zero Pressure tire, which is specially designed for road service and is known as the Tractor-Grader tire, may be secured by those interested from the B. F. Goodrich Co., Akron, Ohio.

A Sand Spreader for Truck Mounting

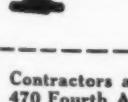
182 Bulletin KSS describing the Good Roads sand spreader, an independent unit consisting of a steel hopper, screw conveyor, spinner disc, gasoline engine, drive gears, shafting and bearings, all mounted on channels as a single unit for mounting on any standard truck chassis, and which spreads, under normal conditions, about 3 miles of sand 9 feet wide per hour, may be secured by those interested from the Good Roads Machinery Co., Inc., Kennett Square, Pa.

A New Machine for Wet-Rubbing Concrete Construction

183 Concrete Surfacing Machinery Co., 4559 Spring Grove Ave., Cincinnati, Ohio, will be glad to send to those interested complete information on the new Berg water-feed concrete surfer for wet rubbing concrete construction which can be furnished as a complete machine, consisting of the water-feed head and any one of the Berg motor units, or just the water-feed head, known as Berg Model W, may be purchased as an attachment for Berg concrete surfacers now in use.

(Continued from page 54)

LIFT OUT IDEAS



by the Bucketful
from
**Contractors
and
Engineers Monthly**

In these days of keen competition it pays to know a little more than the other fellow.

IS YOUR WORK ALONG ANY OF THESE LINES?

- Road building or repair?
- Excavating?
- Grading?
- Bridge building?
- Dredging?
- Dams?
- Harbors and piers?
- Foundations?
- Railroads or tunnels?
- Water works?
- Sewer construction?

IF SO—

You will find the experiences of others engaged on similar jobs helpful. CONTRACTORS AND ENGINEERS MONTHLY will keep you in touch with such jobs at a dollar a year! It takes only a few minutes to glance over the magazine for ideas—but it takes a LONG time to make up the losses on some tough job that didn't go through according to schedule, perhaps because of failure to check up on some of the "little things that count." Look CONTRACTORS AND ENGINEERS MONTHLY over each month for these "little things that count"—the little ideas on organization, equipment and methods that will cut your costs and increase your profits!

Contractors and Engineers Monthly
470 Fourth Ave., New York

Gentlemen: Please enter my subscription for one year at \$1.00 — (or three years at \$2.00 —).

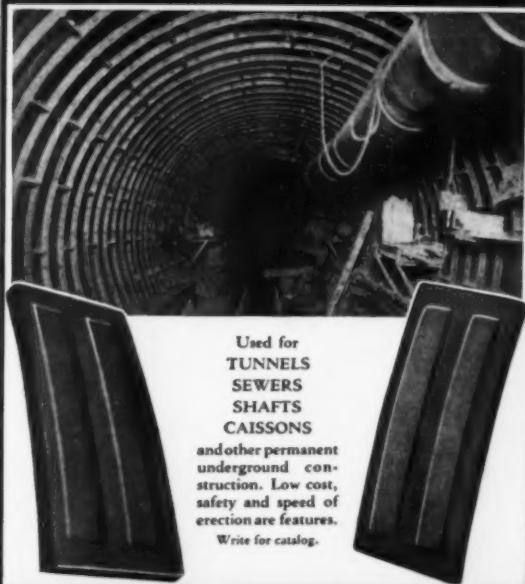
NAME

FIRM NAME.....

STREET AND NO.....

CITY AND STATE.....

TRUSCON STEEL LINER PLATES



Used for
TUNNELS
SEWERS
SHAFTS
CAISSONS

and other permanent
underground con-
struction. Low cost,
safety and speed of
erection are features.

Write for catalog.

TRUSCON STEEL COMPANY
6100 TRUSCON AVENUE, CLEVELAND, OHIO

Bituminous Road and Street Machinery

Tar Kettles

Asphalt Plants

Maintenance Machines
Surface and Tool Heaters
Kerosene Torches

Chausse Oil Burner Company

ELKHART

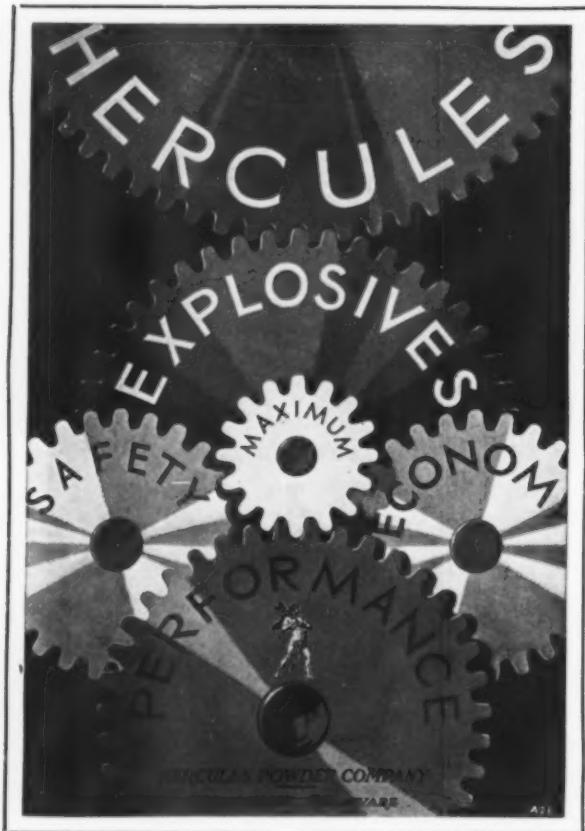
INDIANA

For Immediate Disposal

Like new, one or two-bag concrete mixers—equipped for State work—Available at rare bargain prices.

Address:
Box 176

Contractors and Engineers Monthly
470 Fourth Ave. New York



BUFFALO SPRINGFIELD

STANDARD...

Leadership is usually of short duration. Champions come and champions go in never-ending procession. Not so of the Buffalo-Springfield roller. It has held its rating as the premier roller for decades—is the leader today—will still be, we pledge you, the best roller a generation hence.

Three wheel and tandem models, steam or motor driven. All practical sizes and weights. Scraper and other attachments, as desired.

The Buffalo-Springfield Roller Co.
Springfield, Ohio

Please mention CONTRACTORS AND ENGINEERS MONTHLY—it helps.

New Equipment Brings Profits

(Continued from page 52)

New Features for Bituminous Distributors

184 The 1933 line of Etnyre bituminous distributors have a number of new and interesting features, among them the circulating spray bar with a valve at each nozzle to prevent dripping from the nozzles after spraying. Complete information may be secured from E. D. Etnyre & Co., Oregon, Ill.

An Adjuster for Black-Top Pavement

185 The Gledhill road adjuster for leveling black-top pavements making uniform berms and adjusting road levels to any desired crown, which can be attached to a grader or supplied on its own chassis, is described in literature which the Gledhill Road Machinery Co., Galion, Ohio, will be glad to send on request.

Bins and Batchers

186 The Erie AggreMeter plant, a self-contained unit for storing and batching aggregate, which can be easily moved from one location to another, and may be secured with one, two or three compartments, is described in literature which the Erie Steel Construction Co., Erie, Penna., will be glad to send on request.

Roller Bearings for Construction Equipment

187 Hoffman precision roller bearings for heavy loads and severe service are described completely in literature which the Norma-Hoffman Bearings Corp., Stamford, Conn., will be glad to send on request to those interested.

Portable Air Compressors

188 O. K. portable air compressors, which are made in two sizes, 120 and 240 cubic feet per minute and which meet the operating requirements for pavement breakers, rock drills, riveting hammers, and similar pneumatic tools, are described in literature which the O. K. Clutch & Machinery Co., Columbia, Penna., will be glad to send on request.

Equipment for Sand and Gravel Plants

189 Literature describing the line of Robins equipment for sand and gravel plants, including conveyors, crushers, screens, grizzlies, feeders, bins and similar equipment, may be secured by interested contractors from the Robins Conveying Belt Co., 15 Park Row, New York City.

Power for Construction Equipment

190 Waukesha engines, designed for structural rigidity, features of which are the girder crankcase with box-section base rib, full-power engine design, full-pressure lubrication and precision mounting at the bearings, are described in literature which the Waukesha Motor Co., Waukesha, Wis., will be glad to send on request.

A Process for Strengthening Ground Structures

191 The process of injecting a liquid mixture of cement, known as Cementation, into cavities, fissures, cracks or pores, and strengthening of the ground structure and making it impermeable to water or air, is described in literature which the Dravo Contracting Co., Pittsburgh, Penna., will be glad to send on request.

Asphalt for Road and Street Construction

192 The Texas Co., Asphalt Sales Dept., 135 East 42nd St., New York City, will be glad to send to interested contractors full information in regard to Texaco asphalt for use in street and road construction for durability and permanence.

Asphalt and Stone Spreader

193 Bulletin No. 141, recently issued by the Galion Iron Works & Mtg. Co., Galion, Ohio, describes and illustrates Galion asphalt and stone spreaders, the road widening spreader and the Galion mixing and leveling drag for mulch operation.

Large Metal Culverts to Replace Small Bridges

194 This is the substance of the latest catalog issued by the Armclo Culvert Manufacturers Assn., Middletown, Ohio, on Armclo Multi-Plate, the installation of which is quicker, easier and better than small bridges, thus saving time and money. Copies of this 32-page illustrated Catalog No. 10 may be secured without charge direct from the Association.

A Scraper for Hard Digging

195 Sauerman Bros., 464 So. Clinton St., Chicago, Ill., will be glad to send to those interested complete information on the new Crescent hydraulic scraper which can be used behind a tractor for grading, cut and fill and other dirt moving work, and which is made in various sizes for operation with tractors for all sizes and makes.

A Sharpener for Well Drill Bits

196 Complete information on the new WD sharpener for well drills which, according to the manufacturer, effects a saving of 50 to 61 per cent in drilling costs and 50 per cent in sharpening costs, may be secured by those interested from Ingersoll-Rand Co., 11 Broadway, New York City.

A New Portable Screening and Crushing Plant

197 A complete description of the new B-G portable screening and crushing plant, which consists of two units, a crushing plant working in conjunction with a standard B-G bucket loader with a vibrating screen, forming a complete excavating, screening, crushing and loading plant which is self-propelled and portable, may be secured by interested contractors from the Barber-Greene Co., 485 West Park Ave., Aurora, Ill.

Portable Steel Bins for Handling Concrete Aggregates

198 Heltzel Steel Form & Iron Co., Warren, Ohio, will be glad to send to interested contractors its literature describing Heltzel steel portable bins for handling and batching concrete aggregates.

Cutting and Welding Apparatus

199 Milburn cutting and welding apparatus, including combination cutting and welding outfitts, cutting and welding torches for oxygen, acetylene and other gases, tips, extensions, hose and other accessories, are described in literature which the Alexander Milburn Co., 1416-1428 West Baltimore St., Baltimore, Md., will be glad to send on request.

PROFESSIONAL DIRECTORY

Engineers, Architects & Contractors

FRANKLIN BIEDERMAN

Consulting Civil Engineer
Municipal, Economics, Efficiency
Florence Arizona

HOWARD S. REED
SHELDON K. BAKER

Consulting and Civil Engineers
Municipal, Irrigation and Sanitation Investigations and Appraisals
417-420 Phoenix National Bank Bldg.
Phoenix Arizona

WILL D. O'SHEA

Consulting Engineer
Parks and Playgrounds Landscaping,
Municipal Engineering
801 South 12th Street Ft. Smith Ark.

W. W. CROSBY

Consulting Engineer
Highways, Parks,
Traffic and Transportation.
Box 685 Coronado, Calif.

ROSEWATER, W. M.

Assoc. M. Am. Soc. C. E.
Consulting and Designing Engr.
Specializing on Harbor and Mining
Dredges, Acid Phosphate Fertilizer
Plants, o-o Windsor Apt. Hotel,
West 7th St. at Catalina, Los
Angeles, Calif.

FREDERICK J. AMWEG

M. Am. Soc. C. E.—Am. Am. Engr.
M. Soc. Am. Mdl'n Engr.
Designing & Cons. Engineers
Industrial Buildings and other Structures,
Wharves and Bridges, Engineering Projects,
Supervision. Reports, Valuations.
251 Kearny St. San Francisco, Cal.

CARNEY HARTLEY, M.E.

Design and Supervision of
Sand and Gravel Plants,
Suction, Bucket and other type
Dredges
614 Colorado Bldg.
Denver, Colo.

J. FREDERICK JACKSON

M. Am. Soc. C. E.
CONSULTING ENGINEER
Beverage — Water Works — Sanitation
City Planning
Telephone: 7-4443
166 Church Street New Haven, Conn.

ALEXANDER LYNCH

JOHN F. LYNCH
Members Am. Soc. C. E.
Civil and Sanitary Engineers
Swimming Pools
84 Chestnut St., West Haven, Conn.

BROWN, W. N., INC.

Engineers
Aerial Photographic, Planimetric and
Precise Surveys
Planned, Supervised, Executed
Washington, D. C., Nat'l Press Bldg.
Louisville, Ky., 306 Realty Bldg.

Alvord, Burdick & Howson

Engineers
John W. Alvord Louis R. Howson
Charles B. Burdick Donald H. Maxwell
Water Works, Water Purification, Flood
Control, Sewerage, Sewage Disposal,
Drainage, Appraisals, Power Generation,
Civic Opera Building Chicago

BARKER, FLAVIN, SHEETS & WALLACE

Engineers
Specialists in All Municipal Improvements — Paving — Sewers — Water —
Electric Light and Power.
35 East Wacker Drive, Chicago, Illinois

Consoer, Olden & Quinlan, Inc.

Consulting Engineers
Water Supply—Sewerage—Flood Control
—Drainage—Bridges—Street Lighting
Chicago Engineering Bldg.
Branch Offices: St. Louis, Mo., and
Madison, Wis.

Harza Engineering Co.

Consulting Engineers
Dams, Hydraulic, Hydro-Electric, Flood Control and Sanitary Projects.
20 N. Wacker Drive Chicago

RANDOLPH-PERKINS CO.

Consulting Engineers
Municipal and Sanitary
Zoning Surveys
8 East Huron Street, Chicago

The SCHERZER ROLLING LIFT BRIDGE CO.

Engineers
Movable and Fixed Bridges
Monadnock Block, Chicago

WALTER A. SHAW

Consulting Engineer
Particular attention given to Public Utility Rate Cases, Operating Problems,
Reports for Banks and Investors, Public Utility Management, Construction Work
including Designing and Supervision.
30 North LaSalle Street, Chicago, Illinois

HOWARD S. WILLIAMS, C.E.

Consulting Engineer
Assoc. Member Am. Soc. C. E.
Drainage, Flood Protection, Municipal and Sanitary Engineering, Railroad Surveys, Farm and City Surveys, Valuation, Investigations, Reports, Swimming Pools
206 West 8th Street Atlantic, Iowa

EARL ENGINEERING CO.

GEO. G. EARL RALPH EARL
M. Am. Soc. C. E. M. Am. Soc. M. E.
Municipal or Industrial
Consultation
Reports, Plans, Supervision
American Bank Bldg. New Orleans, La.

H. K. BARROWS

Member Amer. Society C. E.
Consulting Hydraulic Engineers
Hydro-electric plants—plans, reports,
supervision and advice
Water supply and hydraulic problems
8 Beacon St. Boston

IRVING B. CROSBY

Consulting Geologist
Specializing in Geological Problems of
Engineering Projects. Investigations of
Dam and Reservoir Sites, Foundations,
Groundwater Supplies, Quarries and
Sand Deposits. Soil Testing Laboratory.
8 Beacon Street Boston, Mass.

J. R. WORCESTER & CO.

Engineers
Buildings, Bridges, Foundations, Steel and Reinforced Concrete Designs, Investigations, Expert Testimony, Cement and Sand Testing
79 Milk Street Boston, Mass.

HENRY F. BRYANT & SON

Consulting Engineers and Architects
Specializing in
Design and supervision of erection of
reinforced concrete and steel construction.
Foundations, topographical, landscape and subdivision surveys and plans.
Investigations, reports, appraisals.
334 Washington Street Brookline, Mass.

MacElwee & Associates, Inc.

Investigations, Reports, Design, Supervision.
Port Development, Piers, Terminals, Airports, City Planning, Water Front Reclamation, Industrial Surveys.
Main Office: 11 West 42nd Street
124 Main Street New York City
Cambridge, Mass. New York

PERCIVAL M. CHURCHILL

Consulting Engineers
Member: Am. Soc. Civil Engineers,
Am. Soc. Agricultural Engineers
Preliminary Investigations and Reports,
Swamp and Salt Marsh Problems, Mosquito Control, Flood Control, Drainage, Irrigation
180 West Street Elmwood, Mass.

J. FRANCIS LeBARON

Fellow A. A. A. Science Mem. Am. Soc.
Civ. Engrs.
Consulting Engineer and Geologist
Examinations, Designs, Water Works and
Sewer Systems, Dams, Locks, Estimates, River Control, Drainage, Reclamation, Canals, 60 years experience.
Amparo Villa, Essex, Mass.

G. J. Wagner & Company

Consulting Engineers
Grand Rapids, Mich.
Public Utility and City Management,
Construction, Operation, Rates

WILLIAM W. TEFFT

Consulting and Designing Engineer
Water Power, Steam Power, Electric Generation, Transmission and Distribution,
Structures, Difficult Foundations, Buildings, Reports, Construction and Financing
Consumers Power Bldg. Jackson, Mich.

S. A. SIVERTS, JR.

Municipal Engineer
464 Sexton Bldg.
Minneapolis, Minn.

C. A. P. TURNER

Consulting Engineer
M. Am. Soc. C. E. Reinforced Concrete and Structural Steel Bridges Buildings, and Manufacturing Plants.
300 Builders Exchange Bldg.
Minneapolis, Minn.

<p>RALPH W. RICHARDSON <i>Consulting Engineer</i> Investigations, Reports, Design, Supervision, Mechanical, Hydraulic, Electrical 118 E. 4th St. St. Paul, Minn.</p>	<p>J. J. DEL BOURGO, C.E. <i>Consulting Engineer</i> Steel, Concrete and Timber Structures Designs, Details and Supervision Quantity Surveys and Cost Estimates 17 Edison Place, Newark, N. J.</p>	<p>EVANS CLEARING CORPORATION <i>Land Clearing Consultants</i> Special Equipment and Methods for Clearing Reservoirs, Highways, Golf Courses, Parks, Airports, etc. REPORTS — APPRAISALS — CONTRACTS 250 Lafayette Ave. Englewood, N. J.</p>	<p>LEE, WILLIAMS S. <i>Consulting Engineer</i> M. Am. Soc. C. E.; M. Am. Soc. M. E.; M. Eng. Inst. Con.; Fellow Am. Inst. E. E. 535 Fifth Avenue New York City Charlotte, North Carolina</p>
<p>Burns & McDonnell Eng. Co. <i>McDonnell-Smith-Baldwin-Lambert Consulting Engineers</i> Water Works, Sewerage, Lighting, Appraisals, Rate Investigations. Kansas City, Mo. Interstate Bldg. Los Angeles, Cal. Western Pacific Bldg.</p>	<p>J. C. MEEM, C. E. Design and Supervision of Methods for Building—Subways, Soft-Ground and Trench Tunnels, Underpinning, Foundations, etc. Sectional Web-Plate Girders for Heavy Duty in Restricted Spaces. 140 Nassau St. Brooklyn, N. Y.</p>	<p>JACOB FELD, Ph.D. <i>CONSULTING ENGINEERS</i> Soil Problems Foundations and Structures Cost Estimates of Heavy Construction 103 Park Ave. New York, N. Y.</p>	<p>MORAN & PROCTOR <i>Consulting Engineers</i> Foundations for buildings, bridges, dams, and all other substructure work. Designs and supervision. 120 E. 41st St., New York City</p>
<p>BLACK & VEATCH <i>Consulting Engineers</i> E. B. BLACK N. T. VEATCH, Jr. Water Supply, Water Purification, Sewerage, Sewage Disposal, Power Plants, Valuations, Special Investigations, Reports and Laboratory Mutual Bldg. Kansas City, Mo.</p>	<p>GEORGE C. DIEHL, Inc. <i>Consulting Engineers</i> Ellicott Square, Buffalo, N. Y.</p>	<p>CHARLES EVAN FOWLER M. I. Am. C. E.—Eng. Inst. Can. M. Soc. Term. Eng. Bridges and Structures Financing for Good Projects Suite 405 5 West 63d Street New York City</p>	<p>O'ROURKE, JOHN F. <i>Consulting Engineer</i> Reinforced concrete block, R. R. tunnels, subways, sewers. Shield driven without settlements. Designs Shop Drawings New York City 17 Battery Pl.</p>
<p>CLARK E. JACOBY <i>ENGINEERING CO.</i> <i>Engineers</i> Reports, Estimates, Valuations, Investigations, Plans, Surveys, Supervision of Construction. Interstate Bldg., Kansas City, Mo.</p>	<p>AMBURSEN CONSTRUCTION CO., INC. <i>Engineer-Constructors</i> Ambursten Dams 295 Madison Avenue, New York Alexander Building, San Francisco</p>	<p>Fuller & McClintock <i>Engineers</i> New York 170 Broadway Philadelphia, Pa. Pennsylvania Bldg. 15th & Chestnut Sts.</p>	<p>MALCOLM PIRNIE <i>Engineer</i> Malcolm Pirnie Charles F. Huff Water Supply, Treatment, Sewerage Reports, Plans, Estimates, Supervision and Operation, Valuation and Rates. 25 W. 43rd St. New York, N. Y.</p>
<p>Mullergren, Arthur L. <i>Consulting Engineer</i> Specialist in Electric Light, Power and Water Pumping 202 Fairfax Bldg. Kansas City, Mo.</p>	<p>BABCOCK BROTHERS <i>Consulting Engineers</i> Dudley P. Babcock Harry G. Babcock Specializing in Concrete Bridges and Viaducts Steel Bridges, reports, surveys and investigations of Statically Indeterminate Structures by Bogen Deformator Method 55 W. 42nd St. New York</p>	<p>GILES DRILLING CORP. "Bonded" for Core Borings and Soundings of every Description—Diamond Drill Work Main Office 19 W. 44th St. New York, N. Y.</p>	<p>Alexander Potter, C. E. Hydraulics, Sanitation, Concrete Structures Designed, Executed 50 Church Street New York (Hudson Terminal) Tel: COrland 3195</p>
<p>SVERDRUP & PARCEL <i>Consulting Engineers</i> Bridges, Foundations Buildings, Valuations 2095 Railway Exchange Bldg. ST. LOUIS, MO.</p>	<p>Maurice Blumenthal & Assoc. <i>ENGINEERS AND CONSULTANTS</i> Designers and Builders of Vehicular Tunnels, Toll Bridges, Transit R. R. Tunnels, Caisson, Concrete, Pile Foundations, Difficult Underpinning. 55 West 42nd St. New York, N. Y.</p>	<p>FULLER AND EVERETT CIVIL, HYDRAULIC and SANITARY ENGINEERS WATER SUPPLY and SEWERAGE W. E. Fuller C. M. Everett 25 West 43rd Street New York</p>	<p>CLYDE POTTS 36 CHURCH ST. NEW YORK Civil and Sanitary Engineer Sewerage and Sewage Disposal Works, Hydraulics, Water Works, Filtration, Reports, Plans and Estimates</p>
<p>H. A. DAVIS <i>Municipal Engineering</i> 1220 Main St., Crato, Neb. 722 Main St., Omaha, Iowa Specialist in Sewers, Waterworks and Pavements, Examinations, Investigations, Surveys, Reports, Test and Supervision</p>	<p>City-Wastes Disposal Co. <i>Consulting Engineers</i> Specialists in Sewerage and Sewage Disposal, Investigations, Reports, Plans and Supervision 45 Seventh Avenue New York City</p>	<p>NICHOLAS S. HILL, JR. <i>Consulting Engineer</i> Water Supply—Sewage Disposal—Hydraulic Developments—Reports—Rates—Designs—Investigations—Chemical & Biological Laboratories 112 East 19th St. New York, N. Y.</p>	<p>ROBINSON & STEINMAN H. D. Robinson D. Steinman CONSULTING AND DESIGNING ENGINEERS Bridges and other Structures, Engineering Projects. Designs, Supervision, Investigations, Reports, Valuations, Advisory Services 117 Liberty Street New York</p>
<p>C. G. WIGLEY <i>Civil & Sanitary Engineer</i> 16 East Drive, Atlantic City, N. J. Rate Cases, Valuations, Water, Sewerage, Drainage, Refuse and Factory Wastes, Designs, Construction, Reports</p>	<p>WATSON G. CLARK, C.E. Mem. Am. Soc. C. E. Established 1896 BORINGS For Buildings, Bridges, Dams, Piers, Prospecting, Reports. 30 Church St. New York</p>	<p>HINE, GOLDTHWAITE & MYLOTT <i>Engineers and Accountants</i> Public Utilities 7 Day Street New York</p>	<p>FREDERICK SNARE CORPORATION <i>Contracting Engineers</i> Bridges—Harbor Works—Railroads—Terminals—Warehouses—Industrial Plants—Reservoirs—Dams—Pipe Lines. 114 Liberty St. New York, N. Y. Also Philadelphia and Havana, Cuba</p>
<p>WILLIAM R. CONARD <i>Specialist in Water Works</i> Reports—Materials—Specifications—Tests—Designs—Inspections BURLINGTON, N. J.</p>	<p>H. Burdett Cleveland <i>Consulting Sanitary Engineer</i> Water Supply and Reports Purification Investigation Sewerage and Industrial Waste Sewage Disposal Evaluation Refuse Disposal Design 90 Wall St. New York</p>	<p>CHAS. SCOTT LANDERS <i>Consulting Engineer</i> FOUNDATIONS FOR BUILDINGS AND BRIDGES DESIGN AND SUPERVISION 292 Madison Ave. New York, N. Y.</p>	<p>ROBERT C. STRACHAN <i>Consulting Engineer</i> Bridges and other Structures, Reports, Advisory Services 138 Liberty St. New York, N. Y.</p>
<p>Engineering—Economic Reports ROBERT A. LESHER <i>Consulting Engineer</i> Port and Harbor Development Re-Location of Industries Terminal Transportation Problems L. C. C. Rate Cases 1 Newark Street Hoboken, N. J.</p>	<p>Craftsweld Equipment Corporation We cut Steel under water using ordinary Oxygen, Hydrogen and Compressed Air Steel Cofferdams, Bulkheads, Submerged Constructions, etc. Any Thickness—Any Depth—Anywhere. Phone COLUMbus 5-2132 250 W. 54TH ST. NEW YORK CITY</p>	<p>Charles W. Leavitt & Son <i>Civil & Landscape Engineering City Planning</i> Chrysler Building NEW YORK CITY</p>	<p>CHANGED YOUR ADDRESS? If so, please notify the publishers as we are anxious to have your card in this Directory, correct. Thank you.</p>

<p>Taylor, Henry W. Consulting Engineer Water Supply, Sewerage, Hydraulic Developments. New York City, 11 Park Place</p>	<p>WM. H. EVERS, C.E. Cleveland, Ohio Member A.S.C.E., A.A.C.E. A.S.E., C.E.S. The Wm. H. Evers Engrg. Co. The R. C. Products Co. The Spokane Silver & Lead Co.</p>	<p>RUSSELL THAYER M. Am. Soc. C. E. Consulting Engineer 230 Allen Lane Philadelphia</p>	<p>WILLIAM L. ROCKWELL Consulting Engineer Specialist in Irrigation, Drainage, Soils, Agricultural Development, Investigations, Reports, Plans and Supervision. 220 Camberidge Oval, San Antonio, Texas</p>
<p>CHAS. L. WACHTER Consulting Engineer I UNIVERSITY PLACE NEW YORK</p>	<p>G. EDWIN PIDCOCK CO. Civil and Consulting Engineers Subdivisions, Quantity Surveys, Municipal Engineering, Estate Developments— Design and Supervision of Construction of Dams, Swimming Pools and Industrial Plants B. & B. Bldg. Allentown, Pa.</p>	<p>ISAAC S. WALKER Consulting Engineer Examinations, Reports, Appraisals, Rates Investigations, Water Works, Sewerage and Sewage Treatment Works, Estates, Developments. 629 Chestnut St. Philadelphia</p>	<p>GEORGE C. STONE Consulting Engineer Assoc. M. Am. Soc. C. E. Estimates; Design; Supervision; Industrial; Municipal Reports; Appraisals; Personal Representation. Masonic Temple Danville, Va.</p>
<p>W. W. YOUNG Consulting Engineer PUBLIC WORKS 90 West St. New York, N. Y.</p>	<p>CHANGED YOUR ADDRESS? If so, please notify the publishers as we are anxious to have your card in this Directory, correct. Thank you.</p>	<p>The J. N. Chester Engrs. J. N. Chester, D. E. Davis J. F. Larson J. T. Campbell E. E. Bankson Water Works, Water Purification, Rates Investigations and Appraisements, Sewerage, Sewage Disposal, Operation of Properties, Expert Testimony. 717 Liberty Ave. Pittsburgh, Pa.</p>	<p>ELMER E. BARNARD Consulting Engineer Assoc. M. Am. Soc. C. E. 508 Law Building LYNCHBURG VIRGINIA</p>
<p>WILLIAM S. LOZIER INCORPORATED Consulting Engineers W. S. Lozier, C. E. Elmendorf, B. P. Squire Water Supply and Purification; Sewerage and Sewage Disposal; Investigations; Reports; Design, Supervision. 10 Gibbs Street, Rochester, N. Y.</p>	<p>GRAY & CLAFLIN Consulting Civil Engineers Water Supply and Sewerage Industries and Mining Plants, Foundations, Valuations, Investigations, Reports and Surveys. JOHNSTOWN PENNA.</p>	<p>MORRIS KNOWLES, Inc. Engineers Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning PITTSBURGH, PA.</p>	<p>Southern Drilling Co. Diamond Core Drill Contractors Foundation Testing for Buildings, Bridges and Dams, Exploration and Development of Coal and Mineral Properties SALTVILLE, VIRGINIA</p>
<p>WILLIAM A. SMITH Consulting Civil Engineer Subdivision Design, Railroad Appraisals, Street Paving, Masonry Design, Sewers and Drains, Construction Supervision 107 Lake Avenue, Tuckahoe, N. Y. 17 E. Main Street, Mount Kisco, N. Y.</p>	<p>ALBRIGHT & FRIEL INC. Chester E. Albright Francis S. Friel Water Supply and Purification, Sewerage and Sewage Disposal, Industrial Waste and Refuse Disposal, Investigations, Valuations, Reports 346 So. Fifteenth St. Philadelphia, Pa.</p>	<p>FLOYD & LOCHRIDGE Consulting Engineer General hydraulic engineering investigations and reports, Water supply, Irrigation, Flood control, Drainage, Dams, and Power development. Tower Petroleum Bldg. Dallas, Texas</p>	<p>MOTT CORE DRILLING CO. Diamond Core Drill Contractors Foundation Test Borings for Bridges, Buildings, Dams and all kinds of Minerals Prospecting. Large Diameter Holes Drilled for all Purposes Main Office Huntington, W. Va.</p>
<p>Barstow & McCurdy, Inc. Civil and Sanitary Engineers E. D. Barstow G. E. McCurdy A. Le Feder W. S. Mathews SEWERAGE AND SEWAGE DISPOSAL WATER SUPPLY MUNICIPAL ENGINEERS 31 No. Summit St. Akron, Ohio 5801 Montgomery Rd. Cincinnati, Ohio</p>	<p>SCOFIELD ENGINEERING COMPANY Consulting Engineers Municipal Improvements Industrial Plants and Processes Design, Construction, Appraisals PHILADELPHIA, PENNA.</p>	<p>H. G. OLMSTED Consulting Engineer Municipal Engineering Public Utilities, Financing, Investigations El Paso Texas</p>	<p>J. PAUL BLUNDON Consulting Engineer Streets and Roads—Water Works Sewerage—Sewage Disposal Valuations—Rates Keyser, W. Va.</p>
	<h1>TESTING LABORATORIES</h1>		
<p>Chicago Testing Laboratory, Inc. and affiliated Chicago Paving Laboratory, Inc. Hugh W. Skinner Gene Abeson MATERIALS—PROCESSES STRUCTURES Consultation, Inspection, Testing, Design, Research, Investigation. 808 Lake Shore Drive Chicago</p>	<p>HOWARD INSPECTING and TESTING LABORATORIES Materials of construction of pavements, sewers, bridges, concrete. Concrete cores drilled 43 years' experience. Write for rates. Expert investigations including pavement patents. 234 Mt. Prospect Ave., Newark, N. J. Phone: Branch Brook 2-4873</p>	<p>PEASE LABORATORIES, INC. Chemists—Biologists—Sanitarians Water Analysts and Technical Field Consultants 39 W. 38th St. NEW YORK</p>	<p>H. C. Nutting Company Inspecting and Consulting Engineers Chemical Analysis, Physical Test, Highway, Paving, Bridge and Building Inspection, Test Boring, Specifications, etc. ELMWOOD PLACE STATION CINCINNATI OHIO</p>
<p>WALTER H. FLOOD & CO. Chemical Engineers Paving and Engineering Materials—Inspections—Reports—Specifications— Physical and Chemical Tests—Design and Control of Asphalt and Concrete Mixtures. 822 E. 42nd St. 321 Daniel Bldg. Chicago, Ill. Jackson, Miss.</p>	<p>NEW YORK TESTING LABORATORIES Chemical & Physical Tests, Microscopic Examinations Electrical Tests, Power Plant Tests, Expert Inspections, Cities and Industries. 30 Washington St. New York City</p>	<p>STILLMAN & VAN SICKLEN Incorporated Chemical and Highway Engineers Analyses and Tests of Asphalt Paving Materials, Bitumens, Road Oils, Cement and Concrete. Specifications and Plans Drafted. Investigations, Reports and Inspection Service. Core Borings 227 Front St. New York City</p>	<p>TOLEDO TESTING LABORATORY Consulting Chemical Engineers Roads, Pavements, Bridges and Buildings, Inspections, Tests, Reports, Specifications, Design and Control of Concrete and Asphalt Mixtures. 1812 Linwood Ave. Toledo, O.</p>
<p>PATZIG TESTING LABORATORIES Inspection Service Chemical and Physical Testing of Paving and Building Materials, Metals, Fuels, Oils, Water, Etc. 310 Eleventh St. Des Moines, Iowa</p>	<p>FREE CATALOG SUPPLY SERVICE Would you like catalogs or prices on any kind of construction machinery or equipment? No obligation. Write to: CONTRACTORS AND ENGINEERS MONTHLY 470 Fourth Avenue New York</p>	<p>OKLAHOMA TESTING LABORATORIES Inspection—Testing—Analyses Cement, Aggregates, Concrete, Steel Bituminous Mixes and Materials, Paints and Creosoted Timber, Waters, Etc. 1145 NW Second St. L. D. 544 OKLAHOMA CITY, OKLAHOMA</p>	

Contractors and Engineers Monthly

DIRECTORY OF EQUIPMENT DISTRIBUTORS

The following cards (arranged by states) show the names of dealers in contractors' equipment and supplies, with a record of the various lines handled. Canadian cards appear on page 77.

ALABAMA—ARKANSAS

C. B. DAVIS ENGINEERING CO. Brown Marx Bldg. Birmingham, Ala.

Representing

ROBINS—Belt Conveyors and Screens
ALDRICH—Power Driven Pumps
FOSTER-WHEELER—Pulverized Coal Equipment, Superheaters, Condensers and Boilers.
LO-HED—Electric Hoists
INDUSTRIAL BROWNHOIST—Locomotive Cranes
CLEVELAND—Cranes
WHITCOMB—Locomotives

TURNER SUPPLY COMPANY N. W. Corner of St. Louis & Commerce Sts. MOBILE ALABAMA

Representing

McKERNAN-TERRY M & M Form Clamps
CORP.—Pole Hammers
INDEPENDENT PNEU-MATIC TOOL CO.—Red Edge Shovels, Scraps
LINK-BELT CO.—Crawlers, Shovels, Loaders
"Thor" Tools and Compresors
WILLIAMS—Clamshell and Dragline Buckets
ORR & SEMBOWER—Concrete Mixers & Hoists
AMERICAN STEEL & WIRE CO.—"Monitor" Wire Rope
DOMESTIC—Pumps and Hoists
BATES—Bar Tie
JAEGER-LAKEWOOD—Concrete Mixers, Paving Equip., Chuting Equip.
BEEBE BROS.—Hoists and Saws

RONSTADT HARDWARE & MACHINERY CO.

"Pioneers in Good Merchandise"

TUCSON ARIZONA
GALION Graders, Rollers, etc.
MCCORMICK-DEERING Industrial Tractors, Engines
INTERNATIONAL Motor Trucks
BAY CITY Shovels, Cranes, Draglines
ORD Concrete Finishing Machines
MUNICIPAL Sprinklers, Flushers, etc.
STERLING Hoists, Contractors' Pumps
AMERICAN "Trulay" Wire Ropes
SPEARWELL Oil Distributors
BROOKVILLE Locomotives
POMONA Turbine Pumps
MYERS Pumps

G. C. PHILLIPS TRACTOR Co., Inc. 1625-31 Ave. B. So. Birmingham, Ala.

Representing

BAKER "Baker Maney" Self-Loading Scrapers
BYERS Full-Revolving Shovels and Cranes
CHAIN BELT "Fox" Mixers, Pavers, Pumps, Saw Rigs, Etc.
DIXYOL Lubricating Greases
GALION Road Graders and Machinery
HAISS Loaders and Conveyors
HEIL Hoists and Bodies
HERCULES Engines
HVAAS Heavy Duty Trailers
IOWA Screening and Crushing Plants
TOLEDO Torches
Member: Associated Equipment Distributors

Arizona Tractor & Equipment Co. 238 W. Jefferson St. Phoenix, Ariz.

Representing

"CATERPILLAR" Tractors
"CATERPILLAR" Road Machinery
ATECO Dismovers, Bulldozers, Tamping Rollers and Scrappers
ATHLETIC True Wheel
BUFFALO-SPRINGFIELD Rollers
DAY Crushers
HEIL Hoists
KILLEFER Road Tools
LAPLANT-CHOATE Snow Plows
LITTLEFORD Asphalt Equipment
PACIFIC Wire Rope
SPEEDER Shovels
WILLAMETTE-ERSTED Hoists
EUCLID Earth Moving Equipment

ARKANSAS FOUNDRY COMPANY IRON AND STEEL

Little Rock

Arkansas

AMERICAN STEEL & WIRE CO.—Wire Rope and Cable
NATIONAL STEEL FABRIC CO.—Wire Mesh
MILWAUKEE CORRUGATING CO.—Lath and Building Products
MAJESTIC CO.—Coal Chutes and Building Products
IRVING IRON WORKS—Subway Grating
CARTER BLOX-ON-END FLOORING CO.—Industrial Wood Flooring
LINDE AIR PRODUCTS CO.—Purers, Welding and Cutting Equipment
DETROIT STEEL PRODUCTS CO.—Pemstra Steel Bar and Holorib Roof
SAINO MANUFACTURING CO.—Automatic Fire Doors
Also Structural and Reinforcing Steel and Steel Building Products

SMITH-PITTMAN TRACTOR CO., Inc. Tractors and Road Machinery 520-26 No. 28th St. Birmingham, Ala.

Representing

"CATERPILLAR"—Tractors and Road Machinery
SPEDDER—Full Revolving Shovels, Draglines
EMPIRE—Cutting Edges, Wheelbarrows, Carts
EUCLID—Crawler Dump Wagons, Power Scrapers
ATLAS—Rotary Wheel-type Scrapers, Fresnos
LAKWOOD—Finishers, Sub-grading, Machinery
BLAW-KNOX—"Ball" Wagon Graders
KILLEFER—Road Tools, Agricultural Implements
TOWERS & SULLIVAN—Agricultural Implements
LA PLANT-CHOATE—Wagons, Bulldozers, Scrapers

NEIL B. McGINNIS CO. Box 2113 Phoenix, Ariz.

753 E. Jackson St.

Representing

Adams Leasing Wheel Graders
Jaeger Concrete Mixers, Pavers, Pumps, Hoists
Allis-Chalmers Tractors
Barber-Greene Conveyors and Loaders
Bremseth Ripper & Scrappers
Bully Back Fillers & Bulldozers
Erie Road Rollers
General Shovels, Cranes, etc.
Gardner - Denver Portable Compressors, Jack Hammer, etc.
Gorree Spreaders
Huber Road Rollers

Jumbo Wheel Scrapers
LeTourneau Heavy Grading Equipment
Lima Shovels and Draglines
Madison Portable Paving Plants
Master Rotary Scrapers
Milwaukee Gas Locomotives
Morton Dirt Movers
Pioneer Crushing, Screening and Loading Plants
Snow King Rotary Snow Plows

JOE LYONS MACHINERY CO. Contractors' Equipment and Supplies

112 Louisiana St.

Little Rock, Ark.

Representing

REX—Mixers and Pavers, Mortar and Plaster Mixers, Pumps and Saw Rigs
BLAW-KNOX—Curb, Gutter and Road Forms, Batches, Bins, Clamshell Buckets, Truck Turntables
BARBER-GREENE—Conveyors, Loaders, Ditchers
RED STAR—Wheelbarrows, Concrete Carts
NOVO—Hoists, Etc.
UNION—Wire Rope
WAUKESHA-FULLER & JOHNSON—LEROI—Engines
BATES—Bar Tie
P & H—Power Shovels, Cranes and Draglines
Also Quarry & Gravel Plant Equipment

HAVE YOU CHANGED YOUR LOCAL ADDRESS?

Sometimes in the rush of moving to a new location you fail to send us your new address. And as we are anxious to get your copy of the magazine to you on time do not put off writing us. Thank you.

CONTRACTORS AND ENGINEERS
MONTHLY
470 Fourth Ave. New York

MINE & SMELTER EQUIPMENT CO. Construction & Mining Machinery 306-12 South 7th Ave. Phoenix, Ariz.

Representing

LINK-BELT Shovels, Cranes and Draglines
LAKWOOD Mixers, Concrete Placing Equip.
NOVO Hoists, Engines and Pumps
EDWARDS Wire Rope
STRAUB Milling Equip.
DIESEL Engines
GARDNER-DENVER Compressors, Rock Drills
HOABA BROS. Arc Welders

KERN—LIMERICK, Inc. 115 No. Spring St. Little Rock, Ark.

Representing

STOCKLAND Graders, Small Road Tools
KOEHRING Pavers, Shovels and Gravel Plants
T. L. SMITH Mixers and Pavers
INSLEY Mast Hoists, Building Towers
PARSONS Excavators and Backfillers
C. H. & E. Pumps, Saw Teeth and Hoists
CLEVELAND Rock Drills, Air Tools, Etc.
RESILIFLEX Guard Rail
JOHNSON Bins & Batchers

HUBER Road Rollers
CEDAR RAPIDS Crushers and Gravel Plants
SIONEY Steel Scrap, Wheelbarrows, Tools
SCHRAMM Air Compressors, Drill Tools, Etc.
WICKWIRE-SPENCER Wire Mesh and Cables
RIDDELL Maintainers
ALLIS-CHALMERS Tractors
LITTLEFORD Asphalt Hoppers and Equipment
GENERAL WHEELBARROW CO.—Grader Blades, small tools, etc.

For Canadian Distributors, see page 77

THE BROWN-BEVIS CO.

9th St. & Santa Fe Ave. Los Angeles, Cal.

Distributors

Archer Towers
Barnes Pumps
Bay City Truck Cranes
Buckeye Trenco Machines
Burch Stone Spreaders
Carter Pumps
Wester Concrete Mixers
Continental Engines
Ewald Wagons & Scrapers
Plymouth Locomotives
General Shovels, Cranes
Member: Associated Equipment Distributors

Hales Loaders, Conveyors
Huber Goliath Rollers
Lidgewood Hoists, Cableways
Link Belt Shovels, Cranes
Littleford Asphalt Heaters
Michigan 3-yd. Shovels
Mortis-Bennett Shoulder Machines
Owen Clamshell Buckets
Page Dragline Buckets
Williamsport Wire Rope

SHEPHERD TRACTOR AND EQUIPMENT COMPANY

514-20 West 12th St. Los Angeles, Calif.

Representing

"CATERPILLAR" Tractors
"CATERPILLAR" Road Graders
KILLEFER Scrapers, Scarifiers, Road Discs
ATECO Dirt Movers, Bulldozers, Scarifiers
ATHEY True Wheel Trailers
JUMBO Scrapers
LaPLANT - CHOATE Crawler Wagons, Bulldozers
MASTER Bulldozers, Trail Builders, Pipe Handling Equipment
WILLAMETTE Hyster Winches for Tractors

GARFIELD & CO.*Construction Equipment*

Hearst Building San Francisco, Calif.

Representing

PLYMOUTH—Gasoline and Diesel Locomotives
LINK-BELT—Shovels, Cranes, Draglines
BAY CITY—Shovels, Cranes, Draglines
AUSTIN—Trenchers and Backfillers
LEACH—Mixers, Pavers, Saw Rigs
ROLLER BEAR—Rock Crushers
CLIMAX—Engines and Power Units
MUNDY—Hoists and Derricks

CONCRETE MACHY. & SUPPLY CO.

777 E. Gage Ave. Los Angeles, Calif.

Representing

AMERICAN Cable
BROOKVILLE Gasoline
Locomotives
BUTLER Bins & Batchers
BUCKYRUSS-ERIE Shovels and Cranes
BLYSTONE Products Mixers
CLYDE Hoists & Derricks
GARDNER-DENVER Compressors
HANDY Sack Cleaners and Hoppers
THACKSON Crawlers, Shovels and Heavy Duty Trailers
Member: Associated Equipment Distributors

HOMELITE Pumps and Generators
HOCHKISS Road Forms
INTERNATIONAL Industrial Trucks
LE ROI Engines
PARSONS Excavating Mchy.
REX Mixers and Pavers
REX Pumps and Saw Tables
RED STAR Wheelbarrows and Carts
SERVICED Expan. Joints
STEAMERS Elev. & Conveyors
WILLIAMS Buckets and Heavy Duty Trailers

Smith Booth Usher Co.

Los Angeles

2001 Santa Fe Ave.

BARBER-GREENE—Ditchers, Excavators, Loaders
CEDAR RAPIDS—Crushing Plants
EASTON—Industrial Cars
FOUR WHEEL DRIVE—PFD Trucks
FREEMAN—Turntables
GALION—Graders, Rollers
HERCULES—Power Units
JAEGER—Mixers, Hoists, Pumps, Tower Equipment
JOHNSON—Bins, Hoppers
LAKEWOOD—Road Finishers, Forms, Chuting, etc.
CLEVELAND Crawler Tractors
Member: Associated Equipment Distributors

MACWHYTE—Wire Rope
MOHAWK—Asphalt Heaters
MULTIFOOTE—Pavers
MUNDY—Hoists
SAUERMAN—Cableway Excavators, Power Drag Scrapers
SCRAMM—Compressors
SIMPLEX—Trench Braces
SKILSAW—Portable Electric Saws
THEW—Shovels and Cranes
UNION IRON WORKS—Pile Driving Hammers
UNIVERSAL—"35" Shovels and Cranes
Member: Associated Equipment Distributors

JENISON MACHINERY CO.

20th & Tennessee Sts., San Francisco

Representing

Barber-Greene Co.
Barnes Road Pumps
Berg Finishes
Butler Bin Co.
Carbie Mfg. Co.
Carter Humdinga Pumps
Chicago Pump Co.
Cleveland Tractor Co.
Continental Motors Corp.
Galion Iron Works & Mfg. Co.
Hercules Products Co.

Loadmaster Cranes
Morris Machine Works
Orton Crane & Shovel Co.
Rosco Mfg. Co.
Sauermaier Bros., Inc.
Smith Engr. Works
Sterling Pump Works
Superior Engine Co.
Willitt Mfg. Co.

Member: Associated Equipment Distributors

CROOK COMPANY

2900 Santa Fe Ave. Los Angeles, Calif.

Southern California Distributors

Allis-Chalmers—Tractors
Davis Mfg. Co.—Hydraulic Scraper
Brennan Co.—Scrapers, Road Rippers, Implements
Osgood Co.—Shovels, Cranes, Hoists
Buffalo-Springfield Co.—Rollers
Hetzell Steel & Iron Co.—Bins, Batchers, Road Forms
New Engine Co.—Engines, Hoists, Pumps
Morton—Scrapers, Dirt Movers
Sullivan Machinery Co.—Air Compressors
Mark Woodbridge Co.—Backfillers, Bulldozers
D-A—Lubricants

WE WOULD LIKE TO HAVE YOU HELP US

make this Directory of Dealers in construction equipment the most complete and accurate of its kind. Therefore, we would greatly appreciate any suggestions or corrections that you may have to offer.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue New York

KRATZ & McCLELLAND, Inc.522 Bryant St. San Francisco, Calif.
Northern California Distributors

Ransom Concrete Machy. Co.—Pavers, Mixers, Trowels, Chuting
Moore Engine Co.—Engines, Hoists, Pumps, Lighting Units
Chase Oil Burner Co.—Portable Asphalt Plants, Kettles, Surface Heaters
Grayhound—Contractors Portable Saws
Milwaukee Locomotive Co.—Gasoline Locomotives
Speeder Machy. Corp.—Shovels, Cranes, Draglines
Hetzell Steel Form & Iron Co.—Bins, Batchers & Road Forms
Ames Iron Works—Gasoline Road Rollers
Union Iron Works, Inc.—Pile Hammers & Foundation Equip.
Autonix, Inc.—Motor Truck Concrete Mixers
Gelman Ditcher Co.—Ditchers and Trench Supporters
Fischer & Hayes Rose & Steel Co.—Concrete Form Devices
N. P. Nelson Iron Works—Loaders & Conveying Equipment

GARLINGHOUSE BROS.

2416 E. 16th Street, Los Angeles, Calif.

Southern California Distributors for
BLAW-KNOX & WESTERN PIPE CORP.—Road Building Equipment, Steel Forms, Ord Road Finishers, Indus. Equipment, Steel Grating, etc.
BROWNING CRANE & SHOVEL CO.—Shovels, Cranes
DOMESTIC ENG. & PUMP CO.—Road Builders & Dewatering Pumps
RANSOME CONCRETE MACHY. CO.—Cone, Placing Eq., Compactors, Pavers, Pneu. Concr. Placers, Grouters
A. LESCHEN, SONS CO. & CO.—Wire Rope
McKERNAN-TERRY CORP.—Pile Hammers, Lambert National Hoists, Cableways, Whirlies
WORTHINGTON—Portable Compressors, Jackhammers, etc.
MAIL TOOL CO.—Concrete Surfaces
DOBBIE—Derrick & Derrick Fittings
Member: Associated Equipment Distributors

EDWARD R. BACON CO.**CONSTRUCTION EQUIPMENT**

Folsom at 17th St. San Francisco
Adams Graders
Burch Stone Spreaders
Byers Shovels and Cranes
Cedar Rapids Crushers
Cleveland Tractors
Dobie Winches and Derricks
Eaton Industrial Cars
Freeman Turntables
Hercules Power Units
Hornelite Pumps
Huber Rollers
Jaeger Concrete Mixers
Johnson Bins and Batchers
Lakewood Finishers
Member: Associated

Lidgewood Hoists
Midwest Locomotives
McKernan-Terry Pile Hammers
McCormick-Deering Tractors
M & M Wire Clamp Co.
Multi Foot Road Pavers
Northern Conveyors
Ohio Loco. Cranes and Tractor Dump Wagons
Schramm Air Compressors
Templeton Kelly Jacks and Trench Braces
Toledo Torches and Hoses
Trackson Crawler Tractors
Equipment Distributors

ELTON T. FAIR CO.

1611 Wazee St. Denver, Colo.

Representing

J. D. Adams Co.
Pioneer Gravel Equip. Mfg. Co.
D-A Lubricant Co., Inc.
Madsen Iron Wks.
Davey Compressor Co.

LOOK THIS DIRECTORY OVER CAREFULLY

If you find any errors while checking over this directory will you please advise us at once, because it is our desire to keep it accurate and up-to-date at all times.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue New York

NORRIS K. DAVIS, INC.

400 Seventh St. San Francisco, Calif.

Representing

LE ROI CO.—Gasoline Power Units
MINNEAPOLIS STL. & MACHY. CO.—Twin City Engines
ARCHER IRON WORKS—Concrete Placing Equipment
DAVIS CO.—Mixers, Hoists, Motor Truck Concrete Transfer Systems, Readymix Concrete Plants
DIAMOND IRON WORKS—Saw Mill, Rock Crushing, Screening, Conveyor and Transmission Machinery
HANSON CLUTCH & MACHY. CO.—Excavators
O. K. CLUTCH & MACHY. CO.—Hoists, Air Compressor
KEYSTONE DRILLER CO.—Shovels, Skimmers, Pulloscoops, Well Drilling Machy., Tools

Doug O'Gara
INDUSTRIAL & CONSTRUCTION
EQUIPMENT

U. S. National Bank Building, Denver, Colo.

P&H Shovels, Cranes, Draglines, Trench Machines
NORTHERN Portable and Stationary Conveyors
PLYMOUTH Gasoline and Diesel Locomotives
ARCHER Steel Tower & Concrete Distributing Systems
OWEN Clamshell Buckets

OHIO Locomotives Cranes
ERIE Aggregates Plants
McKERNAN-TERRY Pile Hammers
GRUENDLER Crushing and Screening Plants
HIGHWAY 24-8 Wheel Trailers
PAGE Dragline Buckets

DIRECTORY OF DISTRIBUTORS

COLORADO—GEORGIA

Hendrie & Bolhoff Mfg. & Supply Co.
Established 1861
1635 Seventeenth St. Denver, Colo.
Representing

AMERICAN—Contractors Saw Tables
AMERICAN—Hoists, Derricks and Steam Shovels
BARBER ASPHALT CO.—Roofing and Asphalt Products
BEEBE BROS.—Hand Winches
MASTER & WONDER—Concrete Mixers
CLIMAX—Gasoline Power Units
GARDNER-DENVER—Pumps, Air Compressors and Drills
GENERAL ELECTRIC—Motors and Appliances
NOVO—Engines and Hoists
ROERLING—Rope and Wires
SKILSAW CORP.—Saws
UNIVERSAL—Crushers
WYOMING—"Red Edge" Shovels

HERBERT N. STEINBARGER CO.
Construction Equipment
1640-1646 Wazee St. Denver, Colo.

Distributors
BUCYRUS-ERIE Steam, Gas, Diesel and Electric Shovels
Draglines and Cranes
VULCAN Steam and Gasoline Locomotives
DIAMOND Crushing, Screening Plants
ERIE Clawshovel Buckets, Bins, Weighers
SAUERMAN Power Scrapers, Cableway Excavators
AUSTIN Trenching Machines, Backfillers
STERLING Hoists, Pumps
KNICKERBOCKER Concrete Mixers
MULTI-FOOT Paving Mixers
BUFFALO-SPRINGFIELD Road Rollers
BUHL Portable Compressors
HARDSCO Drills and Pavement Breakers

The K. B. NOBLE CO.
REPRESENTING AMONG OTHERS
GALION Gasoline Rollers, Road Graders, Scourers, etc.
SASGEN Derricks, Bins and Gravel Batches
LEROI Engines
SMITH Crushers, Wash Plants
FAURQUHAR Sand and Gravel Washing Plants
OWEN Buckets
SAUERMAN Draglines
LIDGERWOOD MFG. CO. STERLING MACHY. CORP.—Pumps
CHICAGO AUTOMATIC CONVEYOR CO.
Member:
Associated Equipment Distributors
HARTFORD, CONNECTICUT

THE GESNER EQUIPMENT CORP.
254 Park St. New Haven, Conn.

Representing
Jaeger Machine Co.
Northern Conveyor & Mfg. Co.
De Walt Products Co.
Schramm, Inc.
Cleveland Back Drill Co.
Marion Steam Shovel Co.
Lakewood Eng. Co.
Economy Steels and Bits
Complete Rental Stocks

Power Equipment & Service Inc.
109 Water Street New Haven, Conn.

CONN. DISTRIBUTORS
COLDWELL Power Mowers
RODERICK LEAN Scrapers
ROME Road Machinery
OLIVER Implements
SARGENT and WALSH Snow Plows
CLETRAC Crawler Tractors
HART-PARR Tractors
MARLO Pumps
DETROIT Street Sweepers
CHICAGO Pneumatic Compressors

THE HENRY H. MEYER CO.
110 S. Howard St., Baltimore, Md.
628 Munsey Building, Washington, D. C.

Representing
Blaw-Knox Co. Harrington Co.
Boston & Lockport Black Co. Ingersoll-Rand Co.
Byers Machine Co. A. Leeschen & Sons Reape Co.
Philip Carey Co. Pierce Equip. Co.
Chaussie Oil Burner Co. Pulsometer Steam Pump Co.
Clyde Iron Works Sales Co. Ransome Concrete Machy. Co.
Connery & Co., Inc. Richmond Screw Anchor Co.
Domestic Engine & Pump Co. Sterling Wheelbarrow Co.
Dobbs Foundry & Machine Templeton-Kenly Co., Ltd.
Co. Union Iron Works
Duff-Norton Mfg. Co. Galion Iron Wks. & Mfg. Co. Universal Road Machy. Co.
A. B. Farquhar Co., Ltd. Member: Associated Equipment Distributors

McDONALD TRACTOR EQUIP. CO.
2303 N. Orange Ave. Orlando, Fla.

Representing
Caterpillar Tractor Co.
"Caterpillar" Graders
ATHey Truss Wheel Co.
Barnes Manufacturing Co.
Blaw-Knox Company
P & H Cranes
LaPlante-Cheote Mfg. Co.
Detroit Harvester Co.
Chain Belt Co.
Fate-Roof-Heath Co.
Fuller & Johnson Mfg. Co.
Killefer Manufacturing Corp.
Le Boi Company
Goulds Pumps, Inc.
Stover Engines
Century Motors

JULIEN P. BENJAMIN, Inc.
21 N. Ocean St. Jacksonville, Fla.

Representing
McKiernan-Terry Corp.
Barber-Greene Co.
Aerol Burner Co.
Sauerman Bros., Inc.
Heltzel Steel Form & Iron Co.
Standard Conveyor Co.
National Colorotype Co.
Huber Rollers
Lambert-National Hoisting Engines
Owens Buckets
Rosco Distributors
Lewis-Shepard Company
Steel & Conduct
Link-Belt Cranes
Home Graders

FARQUHAR MACHINERY CO.
Mill Supplies and Machinery
720 W. Bay Street Jacksonville, Fla.

Representing
AMERICAN "BOSS" Concrete Mixers
CARBIC Flare Lights, Welding Equipment
CRESCENT Saw Tables and Woodworkers
FAURQUHAR Engines and Boilers
GOULD'S-MYERS Power Pumps
JACKSON Wheelbarrows, Concrete Carts
LINK-BELT Chains, Sprockets, Drives
NOVO Gasoline Engines
NOVO Hoists, Single and Double Drum
NOVO Power Diaphragm & Road Pumps
PLYMOUTH CORDAGE CO. Ropes and Twine
SASGEN Derrick Equipment
SILVERSTRAND Wire Rope and Accessories
TOLEDO Steel Torch Lights
STRUCTURAL STEEL Plain and Fabricated
Full Line of Industrial Supplies

YANCEY TRACTOR COMPANY
109-113 Booker Ave. Albany, Ga.

Representing
"CATERPILLAR" Tractors BARBER-GREENE Loaders
and Road Machinery EXCAVATORS and CONVEYORS
ATHey True Wheels BLAW-KNOX TURBINE,
STEEL FORM, BINS AND EQUIPMENT, BACKHOE, etc.
BAKER-MANEY WHEELERS WATSON DUMP WAGONS HVASS FLUID DRUM SWEEPER
HETZEL ROAD RIPPER KILLEFER ROAD RIPPER
ROTARY SCRAPERS "RED EDGE" Shovels, Pick
"RED STAR" Carts and WHEELBARROWS
EASTON CARS AND TRACK INGERSOLL-RAND COMPRESSORS
MUNDY HOISTS ORD CONS. ROAD SURFAC
BARNES PUMPS HAMMERS
BUFFALO-SPRINGFIELD P. & H. SHOVELS, CRUSHERS
ROLLERS REX CON. MINES, PAPER
LITTLEFIELD BROS. Asphalt LA PLANT-CHEOTE DUMP
Heater Wagons

R. S. ARMSTRONG & BRO. CO.
676 Marietta St. Atlanta, Ga.

Representing
ALLIS-CHALMERS Tractors JAEGER Concrete Mixers
AMERICAN Shovels, Scops JONES-SUPERIOR Shovels
BEEBE Hand Hoists Woodworkers
BUTLER Bins LAKEWOOD Road Mch.
CARBIC Lights Handling Equipment
CHICAGO PNEUMATIC LE ROI Road Mch.
Air Compressors LIDGERWOOD Shovels
CONTINENTAL Motors MIDWEST Lubricants
DOMESTIC Pumps OWEN Buckets
EDWARDS Shears S A S C E D Derricks and
EMERSON Pumps, Valves WINCHES
GALION Road Machinery SKILSAW Portable El. Saw
GENERAL ELECTRIC Motors THEW CON. Shovels
HERCULES Motors UDDEHOLM Drill Steel
WATERLOO Bar Benders WATERLOO Bar Benders
MERCERS Member: Associated Equipment Distributors

Tractor & Machinery Co., Inc.
351 Whitehall Street, S. W. ATLANTA GEORGIA

Representing
NORTHWEST Cranes, Shovels and Draglines
NOVO Engines, Pumps and Hoists
RYAN Road Graders
CHAMPION Rock Crushers
ERIE Aggregometer Plants
RANSOME Concrete Mixers
WORTHINGTON Air Compressors
WILLIAMS Buckets and Trailers
Member: Associated Equipment Distributors

HAVE YOU CHANGED YOUR LOCAL ADDRESS?

Sometimes in the rush of moving to a new location you fail to send us your new address. And as we are anxious to get your copy of the magazine to you on time do not put off writing us. Thank you.

CONTRACTORS AND ENGINEERS MONTHLY
470 Fourth Ave. New York

YANCEY BROTHERS, Inc.

634 Whitehall St., SW. Atlanta, Ga.

"CATERPILLAR" Tractors
"CATERPILLAR" Graders
BAKER-MANEY Wheelers
BALL Wagon Graders
KILLEFER Road Rippers
IOWA Crushers, Planes
REX Pavers and Mixers
REX Pumps and Saws
BARBER-GREENE Loaders
BUFFALO-SPRINGFIELD
Road Rollers
BLAW-KNOX Buckets, Bins
P & H Shovels, Cranes
ORD Road Surface
MUNDY Hoists
LA PLANT-CHOATE Wagons
Wagons
Member: Associated Equipment Distributors

INGERSOLL-RAND Air
Compressors
CROWE Electric Saws
AMERICAN Towers
LITTLEFORD Asph. Tools
LE ROI Gas Engines
WAUKESHA Gas Engines
SMITH Gravel Plants
RED STAR Wheelbarrows
CYCLONE Guard Rail
EASTON Dump Cars
RED EDGE Shovels
WIARD Plows and Scrapers
HVAAS Asphalt Distributors,
Trailers, Flathers, Sweepers
McKERNAN-TERRY File
Hammers

Member: Associated Equipment Distributors

Hamilton Tractor & Equipment Co.

411-419 North Illinois Carbondale, Ill.

Representing

"CATERPILLAR" Tractors
"CATERPILLAR" Graders
"CATERPILLAR" Combines
LA PLANT-CHOATE Wagons
LA PLANT-CHOATE Bulldozers
DOSEY Stump Pullers
"TRULAY" Cable
TOWERS and SULLIVAN Agriculture Implements
ROCK ISLAND Agriculture Implements
WILLIAMETTE-ERSTED Hoists and Winches
KILLEFER Contracting Tools and Agriculture Implements

G. F. LOWE COMPANY

612 No. Michigan Ave. Chicago, Ill.

Representing

MULTI-FOOTE Pavers
HAISS Loaders, Buckets, Excavators
JOHNSON Bins, Batchers, Bulk Cement Plants
JEFFREY Cement Elevators
HUG Trucks, Subgraders
MILWAUKEE Locomotives
ERIE Road Rollers
SAUERMAN Cableways, Power Scrapers
Member: Associated Equipment Distributors

CONSTRUCTION MACHY.
CO. "Master" Concrete
Mixers, Hoists, Plaster
Mixers, Power Sawyers
BARNES Road, Drainage and
Centrifugal Pumps
SCHRAMM Compressors &
Welders
SEALTIGHT Expansion
Joints
CLEVELAND ROCK DRILL
CO.—Air Tools
WILLIAMS Clamshell Buckets and Trailers

A. E. HUDSON COMPANY

311 Franklin St. Peoria, Ill.

Representing

ALLIS-CHALMERS MFG. CO.—Crawler Tractors, Industrial Wheel Tractors, Elevating Graders, Crawler Wagons
BAKER MFG. CO.—Road Tools, Snow Plows
NOVO ENGINE CO.—Gas Engines, Pumps, Hoists
DIAMOND IRON WKS.—Gravel Handling Machinery
NORTHERN CONVEYOR CO.—Conveyors
Corrugated Culverts
Contractors' Jacks and Tools

PAUL COCHRAN EQUIPMENT CO.

228 N. LaSalle St. Chicago, Ill.

Representing

The Shovel Co.
Universal Crane Co.
Worthington Pump & Machy. Co.
Wellman Engineering Co.
Williams Buckets, Trailers
Novo Engine Co.
The Knickerbocker Co.
Richmond Screw & Anchor Co.
American Steel & Wire Co.
D-A Lubricant Co.

SUPERIOR CONSTR. EQUIP. CO.

1850 South Kostner Ave., Chicago, Ill.

Distributors

Chain Belt Co.
Butter Bin Co.
The Huber Mfg. Co.
Portable Machinery Co.
G. K. Clutch & Machy. Co.
Net'r Highway Marker Co.
The Cleveland Formgrader Co.
National Distributors for the "Banty" Roller and Trailer
A Complete Line of Construction Tools and
Equipment Carried in Chicago
TELEPHONE: CRAWFORD 6200
Member: Associated Equipment Distributors

Sullivan Machinery Co.
Rogers Bros. Corp.
Heitzel Steel Form & Iron Co.
Freeman Manufacturing Co.
Auger Machine Co.
Moritz-Bennett Corp.

BOWMAN-RALSTON TRACTOR & EQUIPMENT CO.

401 E. Florida St., Evansville, Ind.

Representing

Caterpillar Tractor Co.
Road Machinery & Harvester Machinery
Athey Truss Wheel Co. Killefer Manufacturing Co.
The Euclid Road Machinery Co. Schramm, Inc.—Com-
pressors
LaPlant-Choate Mfg. Co. Willamette-Ersted Co.
Baker Manufacturing Co. Hoists
Pioneer Gravel Eq. Mfg. Co.

F. H. BURLEW COMPANY

221-225 W. Huron St. Chicago, Ill.

Telephone: SUPERIOR 5804

BARNES—Pumps
BEEREE BROS.—All Steel Hand Hoists
INGERSOLL-RAND—Air Compressors and Tools
JONES-SUPERIOR—Saw Rigs, Power Saws
LAMBERT-NATIONAL—Hoisting Engines
LEACH—Concrete Mixers and Tower Equipment
M & M—Form Cleaners
McKERNAN-TERRY—Pile Hammers
MEYER-HECHT—Adjustable Shores
NORDBERG—Track Shifters, Tunnel Shovels
WILLIAMS—Buckets, Trailers
WINSLOW—Scams
WYOMING—Shovels
Complete Line of Equipment and Supplies

THE TRACTOR & EQUIPMENT CO.

551 W. Van Buren St. Chicago, Ill.

Representing

BROOKVILLE—Locomotives
BUGYRS-ERIE—Loadmaster Cranes
CLEVELAND—Air Tools
DAVEY—Air Compressors
ERSTED—Truck Cranes and Hoists
FRINK—Snow Plows
HERCULES—Rollers
HUGHES-KELIN—Iron Mules
McCORMICK-DEERING—Tractors
NELSON—Loaders
NOVO—Pumps and Hoists
TRACKSON—Tractor Equipment
UNIVERSAL—Power Shovels
WARCO—Graders and Scoops

STOCKBERGER EQUIPMENT CO.Contractors' Equipment
1211-1212 1st & Tri-State Bldg. Ft. Wayne, Ind.*Representing*

Northwest Engineering Co. Greenville Mfg. Wks.
Lakewood Engineering Co. Barnes Mfg. Co.
C. S. Johnson Co. National Steel Fabris Co.
Jaeger Machine Co. Bay City Truck Cranes
Smith Engineering Works G. H. Williams Co.
Moritz-Bennett Corp. Page Engineering Co.
Fred T. Kern Co. W. A. Riddell Co.
Western Elevating Graders Kalman Steel Co.
Northern Indiana's Largest Distributors

W. B. LOUER COMPANYConstruction Equipment
431-5 So. Jefferson St. Chicago, Ill.

ALLSTEEL Tractor Booms & Hoists
ATECO Dirt Moving Equipment
ATHYE Truss Wheel Equipment
"CATERPILLAR" Track-Type Tractors, Road Machy. & Combined Harvesters
DAVEY Air-Cooled Compressors
DETROIT Tractor Booms & Mowers
GETTELMAN Snow Plows
Member: Associated Equipment Distributors

EUCLID Bulldozers, Scrapers, Dump Wagons & Trailers
LA PLANT-CHOATE Bulldozers, Scrapers, Snow Plows, Dump Wagons & Trailers
MIAMI Scrapers & Trailers
RAWLS Mowers
SARGENT Snow Plows
SHAW Land Levelers
WAUSAU Snow Plows
WILLAMETTE-ERSTED Scrapers, Tractor Hoists & Cranes
W-K-M Tractor Booms

Western Contractors Supply Co.Everything for the Contractor
14 No. Clinton St. Chicago, Ill.*Representing*

DOMESTIC—Pumps, Hoists and Engines
BANSOME—Mixers and Pavers
ED STAR—Wheelbarrows and Shores
INGERSOLL-RAND—Compressors and Tools
WIARD—Contractors Plows
Repairs for Climax, Twin City Waukesha and Le Roi Engines

Member: Associated Equipment Distributors

Standard Equipment & Supply Corp.

Successor to McLaughlin Mill Supply Co., Inc.

534 Michigan Ave. Hammond, Ind.

Representing

JAEGER Plaster, Mortar and TOLEDO—Wheelbarrows & Concrete Mixers, Pumps, Hoists, Lakewood Towers and Mast Plants
SASGEN—Derricks MACWHITE—Cable
MARION—Steam Shovels ERIE—Buckets and Bins
GOULD—Pumps MULTIFOOTE—Pavers
CYCLONE—Fence BALDWIN—Shovels
LEROI—Engines TOLEDO—Torches
BATES—Tractors METALWELL-WORTHINGTON—Air Compressors
CASE—Industrial Tractors STOCKLAND—Graders

All Kinds of Used Equipment

DIRECTORY OF DISTRIBUTORS

INDIANA—LOUISIANA

SHEARER & MAYER

712 W. 13th St. Indianapolis, Ind.
Representing

BUFFALO-SPRINGFIELD—Rollers
LIMA "101"—Shovels and Cranes
SAUERMAN—Cableways and Power Scrappers
NIAGARA—Vibrating Screens
UNIVERSAL—Crushers & Pulverizers
GENERAL—Shovels and Cranes
INGERSOLL-RAND—Portable Compressors

THOMAS L. BARRET

Contractors' Equipment

112-114 So. Second St., Louisville, Kentucky
"DOMESTIC" Pumps
WILLIAMS Class Shell and Drag Line Buckets
MAISS Loaders and Material Handling Equipment
ARMSTRONG Blast Hole Drill
UNION Hammers and Concrete Buckets
HUG Trucks, Turntables and Subgraders
MUNDY Hoisting Engines
VULCAN Locomotives
METAFORM Road Rails, etc.
"CAMEL" Automatic Tractor Dump Wagon
KENNEDY Gravel Crushers
CORRUGATED Bar and Mesh Reinforcement
BARRET Asphalt Expansion Joint
ROSCO Pressure-Heater Oil Distributors
BAY CITY Shovels and Cranes
LaCROSS "Tu-Way" Trailers

EASTON TRACTOR AND EQUIPMENT COMPANY

2025 Lower Third St., Alexandria, La.
Tallulah, La.

Representing

CATERPILLAR TRACTOR CO.—"Caterpillar" Tractors and Road Machinery
SPEEDEE MACHINERY CORP.—Crane, Shovels and Draglines
ATLAS SCRAPER CO.—Rotary Scrapers
WILLAMETTE-ERESTD CO.—Tractor Hoists
KILLEFER MFG. CORP.—Farm Tools
BRODERICK & BASCOM WIRE ROPE CO.—Rope
BLAW-KNOX CO.—Ateco Scrapers
LA PLANT-CHOATE MFG. CO.—Wagons and Scrapers
Also
A complete line of Tractor Farming Implements and Tractor Appliances

GIERKE-ROBINSON CO.

4th & Ripley Sts. Davenport, Iowa
Representing

BUCURYS-ERIE—Cranes, Shovels and Draglines
BLAW-KNOX—Steel Road, Curb and Gutter Forms, Bins, Batchers, Clampshell Buckets, Truck Turntables, etc.
CHAIN BELT—Mixers, Pavers, Pumps, Saw Rigs, Conveyors, Elevators
GLYDE—Gasoline and Steam Hoists, Derricks
JAEGER—Mixers, Pumps
A. W. FRENCH—Ord. Concrete Road Finishers
SULLIVAN—Air Compressors, Tools
TRACKSON—Crawlers, Shovels and Backfillers
MCMORMICK-DEERING—Industrial Tractors

Member: Associated Equipment Distributors

Brandeis Machinery & Supply Co.

201 Warnock St. Louisville, Ky.

Representing

J. D. Adams Co.
Aeroil Burner Co.
Barber-Greene Co.
Blaw-Knox Co.
Buoyus-Erie Co.
Buffalo-Springfield Roller Co.
C. H. & E. Mfg. Co.
Cameron Steam Pump Works
Chicago Wheelbarrow Scale Co.
Cleaver Brooks Co.
Clyde Sales Company
The Denning Company
E. I. DuPont de Nemours & Co.
A. B. Farquhar Co.
Member: Associated Equipment Distributors

FLETCHER EQUIP. CO., INC.

309 Magazine St. New Orleans, La.

Representing

ARCHER Towers and Chuting Equipment
BARBER-GREENE Loaders, Conveyors, Ditchers
BAY CITY Truck Cranes
BUTLER Bins, Batchers
CLYDE Hoisting Engines and Derricks
FREEMAN Turntables
HERCULES Gas Road Rollers
LE ROI Portable Air Compressors
LE ROI Gas Engines
LINK-BELT Draglines, Cranes and Shovels
M & M Form Clamps
Member: Associated Equipment Distributors

HERMAN M. BROWN CO.

Des Moines, Ia. Omaha, Nebr.
KOEHRING Pavers, Mixers, Cranes, Shovels, Draglines, Dredges

BLAW-KNOX Road Forms, Bins, Buckets, Turntables, Washing Devices
INSLY Shovels, Cranes, Draglines, Mast Hoist Plants
C. H. & E. Pumps, Hoists, Saw Rigs
SMITH Mixers
WALTER Snow Fighters
HUGHES-KEENAN Iron Mules
PARSONS Treaders and Backfillers
B. & G. Lubricants
KWIK-MIX Tub Mixers
HUBER Motor Rollers
NORTHERN Conveyors
TRACKSON Crawler Wagons
ELCTRAC Tractors
WEHR Maintainers
SCHRAMM Air Compressors
Member: Associated Equipment Distributors

ROY C. WHAYNE SUPPLY CO.

8th & Main Sts. Louisville, Ky.

"CATERPILLAR" Tractors
"CATERPILLAR" Road Machinery
JAEGER Concrete Mixers
HELTZEL Steel Forms
BARNES Pumps
DAVEY Air Cooled Compressors
SHARPSOG Drills
CHICAGO AUTOMATIC Conveyors
NORTHWEST Shovels, Cranes and Draglines
EUCLID Scrapers, Wagons
ATLFFY Wagons
LA PLANT-CHOATE Backfillers
GOOD Roads Crushers, Screens, Elevators
Member: Associated Equipment Distributors

EQUITABLE EQUIPMENT CO. Inc.

410 Camp St. New Orleans, La.

Representing

ACME Road Graders, Rollers
BROWNING Cranes, Shovels
AUSTIN Trenching Machines
BOX Cranes and Hoists
CUMMINS Diesel Engines
ERIE Engines
DEAN BROS. Pumps
ERIE Aggregates, Bins
HYDROL Oil Purifiers
GENERAL ELECTRIC Arc Welders, Motors
INGERSOLL-RAND Air Compressors, Tools
KOPPEL Industrial Cars

DUKEHART MACHINERY COMPANY

106-8-10 W. Second St., Des Moines, Ia.
Representing

ALLIS-CHALMERS Track Type Tractors
ALLIS-CHALMERS Industrial Tractors
ALLIS-CHALMERS Elevating Graders
ALLIS-CHALMERS Power Controlled Blade Graders
ALLIS-CHALMERS Cat. Wagons
ALLIS-CHALMERS Motor Patrols
WILLIAMS Buckets and Trailers
CENTURY & SHAWNEE Pull Type Maintainers
NORTHWEST Shovels, Cranes and Draglines
MICHIGAN Shovels and Draglines
WARCO Scoops
M W Lubricant
SNOW FLOWS, ROTARY SCRAPERS AND FRESNOS

Joe C. Tucker

Morganfield Kentucky

Representing

J. D. Adams Co.
Cleveland Tractor Co.
Western Wheeler Scraper Co.
Harnischfeger Corporation
Lakewood Engineering Co.
A. B. Farquhar, Ltd.
Chain Belt Co.
Link-Belt Co.
Sullivan Machy. Co.
Bellance Crushers
Butler Bin Co.
Huber Mfg. Co.
Euclid Rd. Machy. Co.
Hughes-Keenan Co.

Louisiana Road Machinery Co., Inc.

1111 Julia Street New Orleans, La.

Representing

GALION IRON WKS. & MFG. CO.—Graders, Rollers, Motor Patrols, etc.
CLEVELAND TRACTOR CO.—Tractors
ELGIN CORP.—Street Sweepers & Edgers
EAGLE TRUCK BODY & MFG. CORP.—Dump Wagons
UNIVERSAL CRUSHER CO.—Rock Crushers
STROUD ROAD MACHINERY CO.—Elevating Graders

WILSON MACHY. & SUPPLY CO., Inc.

Contractors' Equipment & Supplies
139-51 North Mill St. Lexington, Ky.

Distributors for
Allis-Chalmers Mfg. Co.
Ingersoll-Rand Co.
Austin-Western Road Machinery Co.
Domestic Engine & Pump Co.
Lakewood Engineering Co.
Theew Shovel Co.
Novo Engine Co.
Construction Machinery Co.
American Steel & Wire Co.
Austin Machinery Corp.
Butler Bin Co.
Foote Company, Inc.
Atlas Powder Co.
"The Contractors' Supply House in Central Ky."

HENRY A. PETTER SUPPLY CO.

Paducah Kentucky

Alemite Equipment
American Wire Rope, Mesh
Bates Bar Ties
Black & Decker Tools
Cedar Rapids Crushers
Chain Belt (Rex) Mixers
D-A Lubricants
DuPont Explosives
Dobie Derricks
Electric Expansion Joint
Farquhar Engines, Boilers
Gulf States Reinforcing Steel
Hanson Excavators
Hauck Heaters and Thawers
Johnson Bins and Hoppers
Lidgewood Hoisting Machy.
Link-Belt Portable Conveyors
Bebe Hand Hoists

SOUTHERN STATES EQUIP. CO., Inc.

1510-1530 Tchoupitoulas St. NEW ORLEANS

Representing

P & H—Shovels, Cranes and Draglines
BLAW-KNOX—Bins, Batchers, Road Forms Buckets
ORD—Concrete Finishing Machines
FOOTE—Paving Mixers
JAEGER—Concrete Mixers
TELSMITH—Sand and Gravel Plants
DOMESTIC—Pumps, Engines
ORR & SEMBOWER—Hoisting Engines
LAKEWOOD—Concrete Chuting
UNION—Pile Hammers
THOR—Compressors and Air Tools
KOPPEL—Industrial Cars and Trucks
STANDARD—Heating Kettles
CONTINENTAL—Gas Engines
CHICAGO—Automatic Material Conveyors
CLEVELAND—Subgrade Scrapers, Form Scrapers
IOWA—Pre-Mix Plants, Crushers

Builders Supply Company, Inc.
P. O. Box 295 Shreveport, La.

Representing

REX—Pavers, Mixers, Pumps
Baw Rigs and Elevators
NORTHWEST—Cranes,
Draglines, Shovels and
Dragline Buckets
HELTZEL—Steel Forms,
Bins and Batchers
TOLEDO—Torches
MORITZ—Shoulder Ma-
chines
BUFFALO—Rollers
OWEN—Clamshell Buckets
MUNDY—Hoisting Engines

WILLIAMS—Wire
Rops
GENERAL—Wheelbarrows,
Concrete Carts & Grader
BLAW-KNOX—Bins
KALMANN—Center Strip
NATIONAL—Steel Fabric
LITTLEFORD—Asphalt
KALMANN
HUG—Turntables and Sub-
loaders
SIMPLEX—Jacks
LeROI—Engines

D. C. ELPHINSTONE, INC.
115 S. Calvert St. Baltimore, Md.

Representing

Kehring Co.
T. L. Smith Co.
Kwik-Mix Co.
Indey Mfg. Co.
Pandos Co.
C. H. & E. Mfg. Co.
Geo. Haas Mfg. Co.
Seaman Bros. Inc.
J. D. Adams Co.
G. S. Johnson Co.
Gardner-Denver Co.

Owen Bucket Co.
LaBour Co., Inc.
Emerson Pump & Valve Co.
Iowa Mfg. Co.
H. K. Porter Co.
Reed Machine Corp.
Truscon Steel Co.
McKiernan-Terry Corp.
Lambert-National Hoists
Goodall Rubber Co.
Minwax Co.

Member: Associated Equipment Distributors

THE EQUIPMENT CO.
23-29 Island St. Boston, Mass.

Representing

LINK-BELT Cranes and Shovels
INGERSOLL-RAND Compressors and
Tools
CONTINENTAL "Red Seal" Gas En-
gines
LIDGERWOOD Hoists

C. M. CONANT COMPANY
Bangor and Portland Maine

Representing

"CATERPILLAR" Tractors and
Graders
SPEEDER Shovels and Draglines
SARGENT Snow Plows
DAVEY Compressors
LaPLANT-CHOATE Bulldozers

JOHN C. LOUIS COMPANY
Incorporated
511 W. Pratt St. Baltimore, Md.

Representing

Jaeger Machine Company
The Lakewood Engineering Co.
American Cable Company
Browning Crane and Shovel Co.
Butler Bin Company
Wheeling Corrugating Company
Good Roads Machinery Company
Littlefield Brothers
The Foote Company
Hotchkiss Steel Products Company
Jones Superior Machine Co.
The Burch Corporation
Wappler Gear Works
Worthington Pump & Machy. Co.

Member: Associated Equipment Distributors

HEDGE & MATTHEIS COMPANY
285 DORCHESTER AVE. BOSTON, MASS.

Albany, N. Y. Buffalo, N. Y.
Providence, R. I. Boston, Mass. Springfield, Mass.
Portland, Maine New Haven, Conn. Worcester, Mass.

Representing

American Tubular Elevator Co. LeROI Company
Austin Machinery Corp. A. Loeschen & Sons Rope Co.
Brookville Locomotive Co. Littleford Bros.
Jones Superior Mach. Co. McKiernan-Terry Corp.
Erie Steel Construction Co. Lamb-Nat'l Hoisting Div.
Red Star Corp. Head-Morrison Mfg. Co.
Hercules Motors Corp. Consolidated Concrete Ma-
chinery Corp.
Homelite Corporation Schenck Div. Co.
Ingersoll-Rand Co. The Ohio Power Shovel Co.
Jaeger Machine Co. Toledo Pressed Steel Co.
Lakewood Engineering Co. Wehr Co.
Dobbie Fdy. & Mach. Co. Lawrence Pump & Engine Co. Wood Shovel & Tool Co.
Member: Associated Equipment Distributors

NORTHERN ROAD EQUIPMENT CO.
82 St. John Street Portland, Maine

Representing

ALLIS-CHALMERS MFG. CO.—Tractors
BAY CITY SHOVELS, INC.—Shovels, Cranes
IOWA MANUFACTURING CO.—Crushers, Gravel Plants
DOMESTIC ENGINE & PUMP CO.—Pumps
FOUR WHEEL DRIVE AUTO CO.—"FWD" Trucks
INTERNATIONAL HARVESTER CO.—Industrial Tractors
N. P. NELSON IRON WORKS—Loaders
SCRAMMAG INC.—Air Compressors and Tools
TRACKSON CO.—Hoists, Loaders
WEHR CO.—Power Road Graders

THE HENRY H. MEYER CO.
658 Munsey Bldg. Washington, D. C.
110 S. Howard St., Baltimore, Md.

Representing

Austin Machinery Co. A. B. Farquhar Co., Ltd.
Blaw-Knox Co. Harrington Co.
Boston & Lockport Block Co. Pulsometer Steam Pump Co.
Brookville Locomotive Co. Ransome Concrete Mach. Co.
Byars Machine Co. Richmond Screw Anchor Co.
Chausse Oil Burner Co. Sterling Wheelbarrow Co.
Connery & Co., Inc. Tempster-Kenly Co., Ltd.
Domestic Engine & Pump Co. Union Iron Works
E. I. Du Pont de Nemours & Co. Universal Road Machy. Co.
Dobie Fdy. & Machine Co. Duff Mfg. Co.

P. I. PERKINS CO.

376 Dorchester Ave. Boston, Mass.

Representing

"Caterpillar" Trac- Pierce Rollers
tors Byers Cranes & Shov-
els Warren Bros. Cement
"Caterpillar" Road Plants
Machinery
Butler Bins & Batchers Rex Mixers, Pavers
LaPlant-Choate Bulldo- Mundy Hoists
zers Schramm Air Compre-
sors
Rex Pumps

ALBAN TRACTOR COMPANY, Inc.

725-27 East 25th St. Baltimore, Md.
Representing
CATERPILLAR TRACTOR CO.
"CATERPILLAR" ROAD MACHINERY
"CATERPILLAR" COMBINE HARVESTERS
GENERAL EXCAVATORS
KILLEFER TILLAGE TOOLS
LINK-BELT SHOVELS & CRANES
EUCLID ROAD MACHINERY CO.
CLEVELAND ROCK DRILL CO.
BARNEE MFG. COMPANY
LA PLANT-CHOATE MFG. CO.
WILLAMETTE-ERSTED CO.
BAKER MANUFACTURING CO.
ROTARY SNOW PLOW CO.
ATHY TRUSS WHEEL CO.
REX-WATSON CORPORATION
"JAY BEE" FEED MILLS
DAVEY AIR COMPRESSOR CO.
BABCOCK MFG. CO.

THE BOND CO.
Harold L. Bond, Pres.

DORCHESTER AVE. & SOUTH BOSTON
OLD COLONY AVE. MASSACHUSETTS

Contractors' Tools and Equipment

SMITH—Mixers and Pavers
KOEHRING—Cranes, Shov-
els and Mixers
PARSONS—Trench Ma-
chines and Backfillers
INSLEY—Excavators and
Concrete Paving Equip.
CHICAGO—Auto. Conveyors
ROGERS—Trailers

HAUCK—Kerosene Heaters
CONNERY & CO.—Asphalt
Kettles
SASGEN—Derriks
JOHNSON Bios and Batchers
NOVO—Gasoline Engines.
Pumps and Hoists
INGERSOLL-RAND — Air
Compressors

Member: Associated Equipment Distributors

M. B. TYLER COMPANY
344 Columbus Ave. Springfield, Mass.

Representing

ATHEY Crawler Type Wagons
"CATERPILLAR" Tractors, Road Machinery
and Combines (Conn. & Western Mass. Terr.)
KILLEFER Tractor Implements
LA PLANT-CHOATE Snow Plows, Bulldozers
W.K.M. Hoists and Rock Crusher for Tractors
WILLAMETTE-ERSTED Hoists for "Cater-
pillars"
DETROIT HARVESTER Mowers and Snow
Plows
EUCLID Scrapers and Wagons
HERCULES Gasoline Rollers
WAUSON Snow Plows
C. R. JAHN CO.—La Cross Tu-Way Trailers
CURTIS Portable Compressors

THOS. M. BROWN, INC.
106 So. Gay St. Baltimore, Md.

Representing

KEYSTONE Shovels and Well Drills
KICKERBOCKER Concrete, Plaster and Mor-
tar Mixers
LE ROI—Riv. Air Compressors
NOVO Hoists
ERIE—Clamshell & Dragline Buckets, Aggre-
gates & Plants
M & M Form Clamps and Shores
TOLEDO Torches
WOOD Shovels
MARLOW Pumps
NORTHERN Conveyors

RAKSOME—Concrete Mixers, Chuting Equip.
NORTHWEST—Cranes, Shovels, Draglines
TRUCKTOR—Crawlers, Trucks
BLAW-KNOX—Steel Forms, Bins, Buckets
ORD—Concrete Road Finishers
FLANNERY MFG. CO.—Detachable Bits
CARTER—"Humdinger" Pumps
INGERSOLL-RAND—Air Compressors
OB-SEMBOWER—Hoists, Boilers, Mixers
ROOS—Shores and Clamps
HAUCK—Oil Burners and Heaters
HAISS—Elevators, Conveyors and Loaders
ALLIS-CHALMERS—Tractors
BAKER—Bulldozers
SARGENT—Plows
BEEBE BROS.—Hoists
CLEVELAND—Formgraders

CYRIL J. BURKE

Great Lakes Terminal Warehouse
DETROIT MICHIGAN

Representing

Lakewood Engineering Co.
Jaeger Machine Co.
Dobie Foundry & Machine Co.
Hercules Motors Corp.
Erie Steel Construction Co.
Eaton Car & Construction Co.
J. D. Farasy Mfg. Co.
J. S. Mundy Hoisting Engine Co.
J. M. Willard Co.
Upson-Walton Co.
A. S. Marlow Co.
Whitecomb Locomotive Co.

DIRECTORY OF DISTRIBUTORS

MICHIGAN—MINNESOTA

Keller Tractor & Equipment Co., Inc.
5163-69 Martin Avenue
Detroit Michigan

Distributors of

Aetco—Dirt-moving equipment
Baker Mfg. Co.—Snow plows, road machinery
Blaw-Knox Company—Finishing machines, road forms, bins, batchers
Bucyrus-Erie Company—Shovels, cranes, draglines
Caterpillar Tractor Co.—Tractors, graders, road machinery
Domestic Engine & Pump Co.—Hoist pumps
Gardner-Denver Co.—Air Compressors and tools
Killefer Mfg. Corp.—Road and farm tools
LaPlant-Chote Mfg. Co.—Bulldozers, backfillers, wagons, snow plows
A. Lechner & Sons Rose Co.—Wire rope
E. D. Etnyre & Co.—Oil and Tar Distributors and Heaters

FRED W. LEMCKE
Liberty Street and Park Place
JACKSON MICHIGAN

Representing

KNICKERBOCKER—Concrete Mixers, Saw Rigs, Mortar and Plaster Mixers
NOVO—Gas Engines, Gas and Electric Hoists, Pumps and Dragline Equipment
CHAUSSE—Portable Asphalt Plants, Tar Kettles, Tool Heaters, Mixer Heaters, Torches, Pre-Mix Plants
CHICAGO PNEUMATIC TOOL CO.—Compressors, Tool, etc.
LIBREY CATAPOLE CORP.—Reflecting Road Signs
“QUIKWAY”—Traffic-Line Painting Machine

R. G. MOELLER COMPANY
14415 Meyers Rd. Detroit, Mich.

Representing

American—Tubular Towers
Barnes—Pumps
General—Wheelbarrows, Concrete Carts
Ingersoll-Rand—Compressors, Air Tools
Krickerbocker—Concrete Mixers, Saw Rigs
Lackawana—Steel Sheet Piling
Lambert-National—Hoisting Engines and Winches
Sagin—Derricks and Winches
Union—Pile Hammers, Mixers, Air Locks
American Steel & Wire—Wire Rope
Wood—Shovels, Picks and Mauls
Dravo—Bottom Dump Buckets
Tri-Lok—Steel Grating
American Marsh—Radi-Prime Pumps
Homestead Valve—High Pressure Jenny

Upper Peninsula Tractor Co.
L'Anse Michigan

Representing

“CATERPILLAR” Tractors
“CATERPILLAR” Graders
“CATERPILLAR” Harvesters
ATHEY Truss Wagons
ROTARY Snow Plows
WAUSAU Snow Plows
KILLEFER Road Machinery
EUCLID Earth Moving Equipment
DIAMOND Gravel Equipment

E. K. S. EQUIPMENT CO.
18 Grandville Ave., S.W., Grand Rapids, Mich.

Representing

ALLIS-CHALMERS—Tractors, Graders
BAKER—Snow Plows, Road Equipment
BERG—Concrete Finishers
CLEVELAND—Air Tools
DIAMOND—Crushers, Gravel Plants
 FLEXIBLE—Road Joint Machinery
FOUN. WHEEL DRIVE—Trucks
HELTZEL—Forms, Bins, Batches
HUBER—Rollers
INSLEY—Towers, ½-yd. Shovels

KOEHRING—Shovels, Cranes, Draglines, Pavers, Mixers
KWIK-MIX—Mixers
LITTLEFORD—Kettles, Heaters, Asphalt Machinery
MACWHITE—Wire Rope
MILWAUKEE—Locomotives
NEISS—Rotary Snow Plows
NOVO—Engines, Pumps, Hoists
NORTHERN—Conveyors
PARSONS—Trenchers, Backfillers
ROSCO—Oil Distributors
SCHRAMM—Air Compressors
T.L. SMITH—Pavers, Mixers

HAVE YOU CHANGED YOUR LOCAL ADDRESS?

Sometimes in the rush of moving to a new location you fail to send us your new address. And as we are anxious to get your copy of the magazine to you on time do not put off writing us. Thank you.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave. New York

HUNTER MACHINERY COMPANY

530 Monroe Ave., N.W. 221 So. Waterman Ave.
Grand Rapids, Mich.

DETROIT, Mich.

ARCHER Towers
BATES Wire Ties
CHAIN BELT Mixers, Pavers, Pump, Saw Rigs, Elevators
CLYDE Hoists, Derricks
HOMELITE Pumps
LESCHEIN Wire Rope
McKERNAN-TERRY Hammers
NORTHWEST Shovels, Cranes
BEEBE BROS. Equipment
Member: Associated Equipment Distributors

BORCHERT-INGERSOLL, INC.

St. Paul, Minn. Duluth, Minn.

American Tubular Towers
Ball Wagon Graders
BB Steel Hand Hoists
Blaw-Knox Concrete Forms, Clamshell Buckets
Clyde Hoists, Derricks
Domestic Pumps
Euclid Crawlers, Dump Wagons and Automatic Scrapers
Hausi Loaders
Highway Sanders
Koppel Industrial Cars
McKernan-Terry Pile Hammer
Allis-Chalmers Tractors
Member: Associated Equipment Distributors

Pingry Tractor & Equipment Co.
1239 Buchanan Ave. Grand Rapids, Mich.

Representing

CATERPILLAR—Tractors, Road Machinery, Combines
LaPLANT - CHOTE—Bulldozers, Trailers, Backfillers, Wagons
KILLEFER—Road Rippers
EUCLID—Automatic Scrapers, Wagons
PIONEER—Gravel Screening, Crushing and Washing Equipment
WAUSAU—Snow Plows, Tractor Equipment
AMERICAN HOIST & DERRICK CO.—Gas Shovels, Cranes and Draglines

LANGE TRACTOR & EQUIPMENT COMPANY

304 Lake Ave. S Duluth, Minn.

Representing

Caterpillar Tractor Co. Tractors & Road Machinery
Killefer Mfg. Corp. Road Tools & Farm Implements
Willamette-Erected Co. Tractor Hoists
LaPlant-Chote Mfg. Co. Wagons, Bulldozers, Backfillers, Snow Plows
Wausau Iron Works Bulldozers, Scarpers
Hi-Way Service Corp. Concrete Mixers
Leach Co. Air Compressors
Davey Compressor Co. Four-wheel Drive Trucks
Duluth Motors Gravel Crushing, Screening, Washing Plants
Diamond Iron Works Shovels
New Shovel Co. Atco Dirt-moving Equipment
Blaw-Knox Co. Air Tools

GENERAL TRACTOR & EQUIP. CO.
2329 University Ave., S.E., Minneapolis, Min.

Representing

CATERPILLAR TRACTOR CO.—Tractors and Road Machinery
KILLEFER MFG. CO.—Road Rippers, Scrapers, Farm Implements
HIGHWAY TRAILER CO.—Digging Machines, Scraper and Winches
LA PLANT-CHOATE MFG. CO.—Bulldozers, Snow Plow, Dump Wagons, Backfillers
FRED GETTELMAN CO.—Truck Snow Plows
HI-WAY SERVICE CORP.—Bulldozers, Scrapers
WAUSAU IRON WORKS—Wausau Snow Plow
LENHART WAGON CO.—Tractor Dump Wagons
BAKER MFG. CO.—Scrapers
MATTSON WIRE & MFG. CO.—Snow Fence
DAVEY—Air Compressors, Caterpillar Mounted
TRAIL-IT—3 1/2-4-vel. Direct-Hitch Dump Wagons
ATHYE TRUSS WHEEL CO.—Crawlers, Dump Wagons and Trailers

MINNEAPOLIS EQUIPMENT CO.

514-520 Second St. S.E. Minneapolis, Min.

Representing

BRODERICK & BASCOM—LAKWOOD—Tower Equipment
Wire Rope
CHAUSSE—Asphalt Plants, Oil Heaters
DAVENPORT—“Cat Tread” Wagons
DIAMOND—Gravel Plant
FISCHER & HAYES—Concrete Form Devices
HUG—Roadbuilder Trucks
HUMPHRIES—Power Pumps
JONES—Superior Saw Rigs
JAEGER—Mixers, Hoists, Pumps, Truckmixers
KARDONG—Column Clamps
KIESLER—Clam Shell Buckets
WORTHINGTON—Air Tools and Portable Compressors

THORMAN W. ROSHOLT CO.

928 So. Fourth St. Minneapolis, Min.

Representing

IOWA “Cedar Rapids” Crusher Plants & Equipment
KOEHRING Pavers, Mixers, Cranes
SMITH Pavers and Mixers
INSLEY Pavers and ½-yard Shovels
VULCAN Steam and Gas Locomotives
PARSONS Trenching Machines, etc.
MCCORMICK - DEERING Industrial Tractors
C. H. & E. Saw Rigs, Hoists, Pumps
KWIK-MIX Mixers
HERCULES Motors
Member: Associated Equipment Distributors

WM. H. ZIEGLER CO., Inc.

2331 University Ave., S.E. Minneapolis, Min.

St. Paul and Duluth

Representing

BUCYRUS-ERIE—Shovels, Cranes and Draglines
PIONEER—Crushing, Screening, Washing Plants
REX—Mixers, Pavers, Moto Mixers, Pumps, Saw Rigs
BUTLER—Bins and Batches
BARBER-GREENE—Conveyors, Loaders, Ditchers
LESCHENS—Wire Rope
ARMSTRONG—Blast Hole Drills
F. W. D.—Four Wheel Drive Trucks
PLYMOUTH—Locomotives
NORDBERG—Shovels, Track Machines

NORTHFIELD IRON COMPANY

487 Nico St. Northfield, Minn.

TOLEDO Torches, Steel Hoses
GROUNDHOG & MASTER Scrapers
BADGER Crushers, Screening Plants
BLIZZARD BUSTER Snow Fence
INDESTRUCTIBLE Grader, Conveyor Belts
MODERN Pumps, Generators
SCHRAMM Air Compressors, Tools
NICO & UNITY Culverts
BLUE DIAMOND STEEL Cutting Edges
STREICH Wagons
QUICKWAY Street Marker
MASSEY-HARRIS 4-W. Drive Tractors

JOHN R. KEY*Our 23rd Year*

1313 So. Garrison St. Carthage, Mo.

Representing

SHUNK MFG. CO.—Cutting Edges
ROME MFG. CO.—Graders
BARNES MFG. CO.—Pumps
SUSSER MCLEAN SCRAPER CO.
 —Scrapers
HIGHWAY TRAILER CO.—Trailers

E. A. MARTIN MACHINERY CO.501-23 School St. Joplin, Mo.
420 W. Commercial St. Springfield, Mo.*Representing*

"CATERPILLAR" Tractors, Road Graders, Combined
 WONDER Concrete Mixers
 MARSH-CAPRON Mixers
 SCHRAMM Air Compressors
 DAY Crushers
 ATHEY Truss Wheel Wagons
 KILLEFER Road Tools
 PIONEER Gravel Loading Plants
 MEYERS Pumps
 BLAKE Type Jaw Crushers
 CORNISH Crushing Rolls
 LAPLANT-CHOATE Bulldozers and Rippers
 BLAW-KNOX Dirt Movers
 EUCLID Road Machinery
 STERLING Pumping Units

O. B. AVERY COMPANY

1325 Macklind Ave. St. Louis, Mo.

Buckeye Ditchers
 Butler Bins
 J. I. Case Tractors
 Chain Belt Mixers, Pavers
 Toledo Torches
 Fargular Boilers

Austin-Western Graders, Rollers, Shovels, Wagons
 Williams Buckets and Trailers
 Cedar Rapids Crushers, Screening & Loading Plants
 NorthWest Shovels, Cranes and Draglines
 Western Wheeled Scraper Co., Grading Equipment
 American Asphalt Heater
 Bebe Hoists and Saws

McKiernan-Terry Corporation
 McKiernan-Terry Div.—Pile Hammers
 Lambert-National Div.—Hoists

C. F. RABBEITT, INC.

1519-21 N. Broadway St. Louis, Mo.

Representing

Bay City Fdry. & Mach. Co. Kwik-Mix Concrete Mixer Co.
 Blaw-Knox Company Lidgewood Mfg. Company
 C. H. & E. Mfg. Company Littleford Bros.
 Cleaver-Brooks Company Madison Iron Works
 Cleveland Formgrader Co. Diamond Iron Works
 Diamond Iron Works Huber Mfg. Company Parsons Company
 Huber Mfg. Company Inley Mfg. Company Rose Mfg. Company
 Koehring Company T. L. Smith Company

Member: Associated Equipment Distributors

GEO. F. SMITH COMPANY

Franklin & Channing Aves., St. Louis, Mo.

Complete Plants Rented

Ransome—Mixers, Pavers, Shovel-Hoists
 Concrete Placing Equip. Skidsteer—Derricks & Winches
 Ingalls-Rand—Compressors Skidsteer—Electric Hand Saws
 Air Tools Skidsteer—Hand Shovels
 Barnes—Centrifugal Rond & LeRoi—Gasoline Engines
 Plunger Pumps
 Clyde—Hoists and Derrick
 Owen—Clamshell Buckets
 McKiernan-Terry—Steam
 Hammers
 Vail—Wire Bar Ties and Gravel Plants
 Twisters
 Symons—Column Clamps
 Winslow—Weighing Scales
 Universa—Form Clamps

TULLEY EQUIPMENT CO., INC.

4215 Clayton Ave. St. Louis, Mo.

Representing

ORTON—Cranes, Shovels, Draglines, Buckets
 LEACH—Mixers, Tower Outfits, Saw Rigs
 ROGERS BROS.—Trailers
 HUMPHREYS—Pumps
 MILWAUKEE—Gasoline Locomotives
 McLANAHAN & STONE—Crushers, Screens
 KALMAN—Reinforcing Steel, Accessories
 SERVICISED—Asphalt Expansion Joint

CONNELLY MACHINERY CO.

2706 Montana Ave. Billings, Mont.

Representing

CATERPILLAR TRACTOR CO.—"Caterpillar" Tractors, Harvesters and Road Machinery
 ATHEY TRUSS WHEEL CO.—Track-Type Wagons and Trailers
 LAPLANT-CHOATE MFG. CO.—Snow Plows Backfillers and Bulldozers
 WAUSAU IRON WORKS—Snow Plows
 KILLEFER MANUFACTURING CO.—Road Rippers, Rotary Scrapers and Farm Implements
 PIONEER GRAVEL EQUIPMENT MFG. CO.—Gravel Crushing and Screening Equipment
 WILLAMETTE-ERSTED COMPANY—Tractor Hoists
 BUCYRUS-ERIE CO.—Shovels, Draglines, Full Shovels and Cranes
 BUCKEYE TRACTION DITCHER CO.—Trench Excavators and Backfillers

MIDLAND IMPLEMENT CO., Inc.

Billings Montana

Representing

FORDSON—Tractors and Industrial Equipment
 BARBER-GREENE—Ditchers, Excavators and Loaders
 BAY CITY—Shovels and Drag Lines
 BRENNIS—Rippers and Scammers
 DIAMOND—Gravel Equipment
 GLACIER—Wood and Wire Snow Fence
 GOHI—Corrugated Metal Culverts
 HYSTER—Hoists and Winches
 MASTER—Rotary Scrapers and Backfillers
 MacWHYTE—Guard Rail Cable and Fittings
 SCHRAMM—Compressors

BUBLITZ MACHINERY COMPANY

2141 Washington St., Kansas City, Mo.

Representing

Jagger Machine Co.
 Lakewood Engineering Co.
 Tew Shovel Co.
 Universal Crusher Co.
 McKiernan-Terry Corp.
 Worthington Pump & Machy. Co.
 Whitcomb Locomotive Co.
 Butler Bin Co.
 Williams—Buckets and Trailers
 Slusher McLean Scraper Co.
 Ames-Baldwin-Wyoming Shovel Co.
 MacWhyte Co.
 Red Star Products Co.
 Saenger Derrick Co.
 Climax Engineering Co.

FUNKHOUSER EQUIPMENT CO.

2425 Jefferson Street

KANSAS CITY MISSOURI

Representing

DIAMOND—Rock Crushers, Gravel Plants
 NORTHWEST—Crane, Shovels, Draglines
 DOMESTIC—Pumps and Hoists
 RYAN—Crane and Maintainers
 SULLIVAN—Concrete Drills, Air Hoists
 LODGERWOOD—House, Gas, Electric, Steam
 AMERICAN—Tubular Towers
 RANSOME—Mixers, Pavers, Tower Equipment
 ERIC—Bins, Aggregates, Buckets
 DOBBIE—Derricks and Derrick Fittings
 PAXSON—Saw Rigs
 AMERICAN—Tray Wire Rope
 Member: Associated Equipment Distributors

ALLIED CONSTRUCTION EQUIP. CO.

1900 North Ninth Street, St. Louis, Mo.

Jagger Machine Co.—Mixers, Pumps, Hoists, Towers, Mast

Lakewood Engineering Co.—Finishing Machines, Subgraders,

Form Tamper, Road Forms, etc.

General Excavator Co.—Shovels, Cranes, Draglines, Trench-

en, Skimmers, Backfillers

Oil Power Shovel Co.—Lima "101" Cranes, Shovels, Drag-

lines, Backfillers

A. Lechner & Sons Rope Co.—Wire Rope and Blocks

Station Shovel Co.—Hand Shovels, Scoops

Beta Wire Tie Co.—Wire Bar Ties, Twisters

Vulcan Foundry Works—Drop and Steam Hammers, Caps

Universal Farm Crane Co.—Form Clamps, Shores

Denton Water Hose & Rubber Co.—Suction, Air, Steam,

Water Hose

Winona Government Scale Works—Weighing Scales

Superior Derrick Co.—Hand Derricks, Cranes, Winches

James Superior Machine Co.—Saw Rigs, Band Saws

Worthington Pump & Machinery Corp.—Compressors

LAWRENCE V. FRALEY & SON

Buder Building St. Louis

Exclusive Territorial Representatives

Barber-Greene Company

The Fate-Root-Heath Co.

Plymouth Locomotives

Sauerman Bros., Inc.

Orr & Sembower, Inc.

The Heltzel Steel Form & Iron Co.

LINCOLN EQUIPMENT COMPANY, INC.

1510 No. 13th St., St. Louis, Mo.

Representing

ALLIS-CHALMERS—Tractors

ERIE—Bins, Aggregates, Clamshell Buckets

KEYSTONE—Excavators, Skimmer, Pullscooper

BARNES—Pumps, Centrifugal, Plunger and

Road Pumps

BAKER—Bulldozers, Scrapers

RIDDELL—Wareco Scoops

We Sell or Rent

We Have the Equipment and a Desire to Please

DIRECTORY OF DISTRIBUTORS

MONTANA—NEW YORK

NEW Y.

HALL-PERRY MACHINERY CO.

802-12 E. Iron St., Butte, Mont.

Representing

American Cable Co. Goodyear Tire & Rubber Co.
Atlas Imperial Diesel Eng. Co. Hazard Wire Rope Co.
Butler Bit Co. Masden Iron Works
Chain Belt Co. Mohawk Asphalt Heater Co.
Chicago Automatic Conveyor Co. Novo Engine Co.
Climax Engineering Co. Rotary Snow Plow Co.
Eglin Corporation Sauerman Bros., Inc.
Etnyre & Co. Smith Engineering Works
Four Wheel Drive Auto Co. Speer Machy. Corp.
Gallon Iron Works & Mfg. Co. Shovel Company
Gardner-Denver Co. Williams Buckets & Trailers
Willet Mfg. Co.

Member: Associated Equipment Distributors

C. A. LIPPINCOTT & BROS., INC.

3rd and Union Streets
MOORESTOWN, N. J.

Phone 268

Representing

CLETRAC Crawler Tractors
ESSEX Hydraulic Bulldozers
ADAMS Leaning Wheel Graders
ADAMS Motor Graders
SCHAFFER Automatic Scoops
SARGENT Snow Plows
GRAVELY Tractor Mowers
KILLEFER Tillage Tools

SLADE TRACTOR CO., Inc.

36 Learned Street Albany, N. Y.

Representing

"CATERPILLAR" Tractors, Road Machinery, Combines
"PLANT CHOATE" Track Wheel Wagons, Bulldozers and
Snow Plows
EUCLID Rotory and Wheel Scrapers, Track Wheel Wagons
KILLEFER Agricultural Implements and Contracting Tools
WILLAMETTE-ERESTED Hoists for "CATERPILLAR"
Tractors
ATHHEY TRUSS Wheel Wagons and Trailers
DETROIT Harvester Mowers and Snow Brush
SCHRAMM Air Compressors
W-K-M Boxes for "CATERPILLAR" Tractors
DORSEY Steel Pullers
BLAW-KNOX Ateco Equipment
MICHIGAN Power Shovels

Northwest Equipment Co., Inc.
Box 1112 Great Falls, Mont.

Complete Line of Road Machinery
and Contractors' Equipment

Representing

KOHLING—Mixers
and Pavers
PARSONS—Trenchers
T. L. SMITH—Mixers
and Pavers
IM SLEY—Concrete
Towers & Chuting
D-A—Lubricants
STEEL BRIDGES AND TRAFFIC TREAD

OWEN—Buckets
COLEMAN Trucks
SCHRAMM—Air Com-
pressors
AUSTIN—WESTERN—
Graders, Sweepers
and Small Tools
PIONEER Gravel
Equipment

REX Mixers and Pavers
BLAW-KNOX Form, Buckets
AMERICAN manganese
Pumps
M. & M. Form Clamps
BUCYRUS-ERIE Shovels
LITTLEFORD Asphalt Heat-
ers
SAUERMAN Cableways
INGERSOLL-RAND Com-
pressors
LE ROY Engines
PLYMOUTH Locomotives
TEL-SMITH Cranes
REPUBLIC Rubber Goods

Member: Associated Equipment Distributors

Dale & Rankin, Inc.

113 Frelinghuysen Ave., Newark, N. J.

Distributors of

Ingersoll-Rand Compressors and Tools
Marsh-Capron and Wonder Mixers
Marlo Pumps
Jones Superior Saw Rigs
Sterling Wheelbarrows
Aeroil Heaters and Tools

EDWARD EHRRBAR, Inc.

29 Meserole Ave. Brooklyn, N. Y.

Brockway Place White Plains, N. Y.

*Contractors' Equipment
Sales and Rentals*

Agents for

JAEGER Concrete Mixers
JAEGER Plaster Mixers
JAEGER Mortar Mixers
JAEGER Pumps
NATIONAL Hoists
JONES-SUPERIOR Saw Tables

**FUCHS
EQUIPMENT COMPANY**
1124 Farnam Ave. Omaha, Neb.

Representing

REX Pumps, Saw Rigs
REX Mixers and Pavers
BLAW-KNOX Form, Buckets
AMERICAN manganese
Pumps
M. & M. Form Clamps
BUCYRUS-ERIE Shovels
LITTLEFORD Asphalt Heat-
ers
SAUERMAN Cableways
INGERSOLL-RAND Com-
pressors
LE ROY Engines
PLYMOUTH Locomotives
TEL-SMITH Cranes
REPUBLIC Rubber Goods

Member: Associated Equipment Distributors

JOHNSON & DEALAMAN, Inc.

60 Marshall St. Newark, N. J.

Representing

RANSOME Pavers, Mixers and Chuting Equipment
PARIS—Transit Mixers
JOHNSON Steel Bins and Baiters
ERIE Gasoline Rollers
BAY CITY Truck Cranes
CARTER Centrifugal, Diaphragm and Force Pumps
ETNYRE Tar and Asphalt Distributors
WILLIAMS Trailers and Bunkers
RED STAR Wheelbarrows, Batch Boxes, and Adjustable
Screens
HANSON Gasoline Shovels and Cranes

H. M. HIRSCHFELD

16th Ave. & 63rd St. Brooklyn, N. Y.

Representing

ORR & SEMBOWER, INC.
THE LAUSON CORP.
AMERICAN SAW MILL MACHIN-
ERY CO.
CONNEAUT SHOVEL CO.
THE LE ROI CO.

**INTERSTATE
MACHINERY & SUPPLY CO.**

1006 Douglas St. Omaha, Nebraska
CLIMAX Engines
MARSH-CAPRON Mixers
WONDER Mixers, Pumps
and Hoists
NOVO Engines, Pumps and
Hoists
BEEBE Hand Hoists
NORTHWEST Shovels and
Cranes
STERLING Wheelbarrows
WILLIAMS Buckets and
Trailing
ALLIS-CHALMERS Tractors
Elevating and Blade Graders
and Track Type Wagons
Member: Associated Equipment Distributors

BUTLER Bits
HOTCHKISS Steel Forms
GARDNER-DENVER Air
Compressors
AMERICAN Wire Ropes
BAY CITY Truck Cranes
CHICAGO Auto. Conveyors
JONES-SUPERIOR Saw Rigs
RANSOME Pavers and Tower
MORRIS Sand Pumps
FISHER & HAYES Form
Clay
BAKER Scrapers
McKERNAN-TERRY Pile
Hammers
Economy Rock Bit Corp.

C. H. LOOMIS & CO.

304 Jelliff Ave. Newark, N. J.

Representing

Chain Belt Co.
Schramm, Inc.
DeWalt Products Co.
Heltzel Steel Form & Iron Co.
Le Roi Co.
Jackson Mfg. Co.
Aeroil Burner Co.
Cleveland Rock Drill Co.
Economy Rock Bit Corp.

STERLING TRACTOR EQUIPMENT CO.

Equipment for CASE, FORDSON, and
McCORMICK-DEERING Tractors

62 Bush Street Brooklyn, N. Y.

Representing

J. L. CASE CO., INC.—Industrial Tractors and
full line of Tractor Equipment
TRAIL-IT CO.—Hitches for Wagons, Trail-
ers and Tractors, Etc.
CLYDE IRON WORKS SALES CO.—Hoists for
the Fordson
CASE & McCORMICK-DEERING—Tractors

HEYNIGER BROTHERS

Contractors' Equipment

6th Ave. and F St. Belmar, N. J.

JAEGER Concrete Mixers
JAEGER Placing Plants
AEROIL Torches, Heaters
Steel Sidewalk and
Curb Forms
"Mud Hog" Pumps
Material Elevators
Air Compressors
Gasoline Hoists
Trench Pumps
Garlic Lights

Wheelbarrows
Mortar Tubs
Steel Mortar Boxes
Picks and Shovels
Tarpaulins
Scaffold Horses
Electric Drills & Saws
Chain Hoists

CONTRACTORS SALES CO., Inc.

N. Broadway Albany, N. Y.

Representing

Allis-Chalmers Tractors and Rd. Machy.
Link Belt Co.
Lakewood Engineering Co.
General Excavator Co.
Pioneer Gravel Equip. Mfg. Co.

LLOYD G. ROSS

3090 Main St. Buffalo, N. Y.

Representing

General Excavator Co.
Hercules Roller Co.

*Sale and Rent of All Kinds of Construction
Equipment*

J. H. WELCH COMPANY, Inc.
Sales, Rental and Service
254 Court Street Buffalo, N. Y.

Representing

ARCHER Tows & Chuting Equipment
BENJONES Pumps
CLYDE Hoists & Derricks
DEWALT Power Saws
ERIE Bus & Aggregates
HAUCK Concrete Heaters
HARVEY Jacks
LEROI Engines, Parts
LINK BELT Cranes, Shovels
MASTER and WONDER Miners
MILBURN Lights
PATENT SCAFFOLDING
PERFECT Form Ties
ROOSHORNS Forming System Column Clamps
RUMSEY Industrial Pumps
SKILSAWS Sanders Tools
SULLIVAN Compressors
Pneumatic Tools
WILLIAMS Form Clamps
WYOMING Red Edge Shovels

GEORGE MALVESE & COMPANY

Jericho Turnpike, Near Nassau Blvd.
GARDEN CITY PARK

Post Office: NEW HYDE PARK, N. Y.

Representing

CLETRAC Crawler Tractors
SCHAFFER Automatic Scrapers
ROME Graders
OIL JACKS
EUCLID Scrapers
ACME Rd. Machine
OLIVER Plows
WALSH Snow Plows

WIARD Plows
EVERSMAN Land Levelers
WESTERN BLOCK CO., Blocks
BRODERICK & BASS COM Wire Rope
"DOT" Lubricating Systems
GRAPHOL Penetrating Oil

A. P. DIENST CO.

Contractors' Supplies

140th St. & 3rd Ave., New York, N. Y.

Distributors

TOLEDO Bull Frog Wheelbarrows
WYOMING Red Edge Shovels
DUFF Sewer Trench Braces
GREDAK Grease
CURRY Wire Ties

Telephone Mott Haven 9-5438

THE WHEELER EQUIPMENT CO.
242 Hopkins St. Buffalo, N. Y.

Representing

ATLAS—Shovels
CASE—Tractors
CARTER—Plow
CLEVELAND—Rock Drills, Tools
CONNERY—Heating Kettles
ERIC—Rollers
ESSICK—Planer Mixers
HOTCHKISS—Steel Forms
HUG—Roadbuilders Trucks, Subgraders
JOHNSON—Bins & Batchers
LIMA "10"—Shovels
MARSH—HERRINGTON—Trucks
MEAD-MORRISON—Shovels, Cranes, Tractors
NELSON—Loaders
NOVO—Engines, Hoists
RICHMOND—Tyrcons, Anchors
RAY-SIGNS—Traffic Signs
ROGERS—Trailers
ROTARY—Snow Plows
SARGENT—Snow Plows
SCHRAMM—Air Compressors
WEHR—Graders, Rollers

HAVE YOU CHANGED YOUR LOCAL ADDRESS?

Sometimes in the rush of moving to a new location you fail to send us your new address. And as we are anxious to get your copy of the magazine to you on time do not put-off writing us. Thank you.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave. New York

FITZGERALD & HUDSON
445 W. 26th St. New York City

Representing

RANSOME Concrete Machinery
TRANSIT Truck Mixers
HANSON Shovels and Cranes
HOTCHKISS Steel Forms
LINK BELT Shovels and Cranes
HEWITT GUTTA-PERCHA CO.

Z. T. DARROW & SON
Niagara Street Canadaigua, N. Y.

Representing

KEYSTONE DRILLER CO. Power Shovels
W. A. RIDDELL CO. Power Graders
RYAN MANUFACTURING CORP. Power or Hand Control Graders
THE OHIO LOCOMOTIVE CRANE COMPANY Excavators
WORRINGTON PUMP & MACHINERY CO. Air Compressors

"Brooks for Concrete Equipment"
R. E. BROOKS COMPANY

Equipment for Contractors

50 Church Street New York, N. Y.
NATIONAL EQUIPMENT CORP.
INSLEY MFG. CO. CLEAVER-BROOKS CO
T. L. SMITH CO. ROSCO MFG. CO.
PARSONS CO. IOWA MFG. CO.
C. H. & E. MFG. CO. QUICK-WAY SHOVEL
BLAW-KNOX CO. CO.
KOEHRING CO. HUG CO.
HANDY SACK BAILEY CO.
ORD CONCRETE ROAD FINISHERS
ALLIS-CHALMERS TRACTORS AND RD.
MACHY.

J. C. HOUSTON
50 Church St. New York City

Specializing in Locomotive Cranes, Steam, Gas and Electric; Truck Cranes, Gas Shovels— $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ yds. capacity

Exclusive Representation

THE BROWNING CRANE & SHOVEL CO.
HOISTING MACHINERY CO.

"Rebuilt Guaranteed Cranes—All Types"

Telephone Cortlandt 7-1992

EUGENE F. VAN NAME
116 John Street Horseheads, N. Y.

Representing

ALLIS-CHALMERS—Tractors
ALLIS-CHALMERS—Graders
A-W—Traffic Tread
BAKEE—Road Drags, Snow Plows
C. M. C.—Wonder & Marsh-Capron Mixers
HUBER—Rollers
HOTCHKISS—Sidewalk Forms
HANSON—Excavators
INGERSOLL-RAND—Air Compressors
JACKSON—Wheelbarrows
MILES—Concrete Block Machines
WARCO—Power Graders
WILLIAMSPOET—Wire Rope
WISCONSIN SPECIAL—Snow Plows

BROWN & SITES COMPANY
Specialists in Contractors' Equipment

Main Office: 30 Church Street
NEW YORK CITY

Exclusive Representative

Lakewood Engineering Co.
Mundy Hoisting Engine Co.
Dobbie Fdy. & Machine Co.
Lawrence Machine & Pump Co.
Midwest Locomotive Works

THE HUBBARD-FLOYD CO., INC.
167th St. & Sedgwick Ave. New York City

Representing

NORTHWEST ENGINEERING CO.
CATTERPILLAR TRACTOR CO.
LA PLANT-CHOATE MFG. CO.
ATHHEY TRUSS WHEEL CO.
BOGERS BROTHERS CORP.
C. S. JOHNSON CO.
KNICKERBOCKER CO.
CONSTRUCTION MACHINERY CO.
BARNES MFG. CO.
INGERSOLL-RAND CO.
LAKEWOOD ENGINEERING CO.
FOOTE COMPANY, INC.

Member: Associated Equipment Distributors

JOHN R. TINKLEPAUGH
LIVINGSTON NEW YORK
Also
924 Central Avenue, Albany, N. Y.

Distributors

CLETRAC Tractors, New and Rebuilt
DAVEY Air Compressors
EUCLID Wheel Scrapers and Fronts
SARGENT Snow Plows
TORK Reclaimers
GALION Road Graders
JOHN DEERE Plows
ESSEX Hydraulic Backfillers

Contractors Trading Company

Contractors' Equipment and Supplies

232 Fulton Street New York

Representing

Ingersoll-Rand Co.
Domestic Engine & Pump Co.
Contractors' Safety Hooks
Weldless Pile Bands

"A Complete Service for the Contractor"

H. J. HUSH, INC.

Contracting Equipment

509-515 W. 56th St. New York, N. Y.

Representing

DOMESTIC ENGINE AND PUMP CO.
Muncie Oil Engine Co.
F. E. Myers & Bros. Co.

PUMPS — ENGINES — AND HOISTS

DIRECTORY OF DISTRIBUTORS

NEW YORK

MAHONEY-CLARKE, INC.

Complete Line of Contractors' Equipment and Supplies

217 Pearl St. New York, N. Y.

Representing

BEAUMONT Material Bins
DAYTON Concrete Buckets
JAEGER Road Pumps
JAEGER Truck Mixers
LAKEWOOD Road Equipment
MARLOW Pumps
VULCAN Hammers, Extractors and Parts
THURSTON Detachable Bits
PUROX Welding and Cutting Outfits

UNITED HOISTING COMPANY, INC.

165 Locust Avenue

NEW YORK, N. Y.

Representing

Sullivan Machinery Co.
Construction Machinery Co.
G. M. T. Company
Barnes Mfg. Co.

H. O. PENN MACHY. CO., INC.

140th St. & East River Bronx, N. Y.

Representing

BYERS MACHINE CO.—WARCO—Graders
Convertible Cranes and Shovels
CHAIN BELT CO.—"REX" Mast Hoists, Towers
Mixers, Pavers, Mortar and Plaster Mixers, Saw Rigs
BUHL Air Compressors
McCORMICK-DEERING—Tractors and Accessories
AMES Gasoline Rollers
TRACKSON Crawlers, Shovels and Bulkloaders
OHIO Tractor and Bulkloaders
Warehouse Stock—Service Station
Member: Associated Equipment Distributors

C. V. PIERCE CO., Inc.

Phone: 64

Bedford Road Pleasantville, N. Y.
178 So. Robinson Ave. Newburgh, N. Y.

Representing

CLETRAC Crawler Tractors
Road Graders
OLIVER Plows
Backfillers and Concrete Mixers
EUCLID Automatic Scrapers
Snow Plows
WORTHINGTON Compressors
LOCKE Power Lawn Mowers

KEYSTONE BUILDERS SUPPLY CO.

85 Palm Street Rochester, N. Y.

Representing

JAEGER—Mixers, Hoists & Towers
TRIPLEX—Road & Self-Priming Centrifugal Pumps
LAKEWOOD—Finishing Machines, Batching Boxes, etc.
SCHRAMM—Air Compressors
CLEVELAND—Air Tools BEEBE—Hoists
DIAMOND—Crushing & Screening Equipment
WILLIAMSPOET—Wire Rope
SASGEN—Derricks
HELTEZEL—Bins, Forms & Batchers
NELSON—Spreader Ties BOSCO—Clamps
BALDWIN—Shovels, Scops RED STAR—Adjustable Jack Shores, Metal Boxes, Chutes, Wheelbarrows & Buggies

RICHARDS & HIRSCHFELD, Inc.

50 Church Street New York, N. Y.

FOREIGN DEPARTMENT

(Export Trade)

AMERICAN SAW MILL MACHY. CO.—Portable Saw Mills, Saw Benches, Woodworkers ORR & SEMBOWER, INC.—Concrete Mixers, Hoists, Steam Boilers
SMITH ENGINEERING WORKS—"Teismith"
Rock Crushers, Screens and Conveyors
AMERICAN SAW WORKS—Circular Saws
CHRISTIANA MACHINE WORKS—Water Wheels, Gears
Agents Throughout the World

POUGHKEEPSIE FARM SERVICE, Inc.

Cottage St. at Bement Ave., Poughkeepsie, N. Y.

Representing

"CATERPILLAR" Tractors, Graders and Harvesters
LA PLANT-CHOATE Bulldozers, Backfillers
EUCLID Wagons and Scrapers
ATHEN Truss Wheel Wagons
WILLAMETTE-ERESTED Hoists
HIGHWAY TRAILER—Boring Machines and Scrapers
ATECO—Hydraulic Dirt Movers
KILLEFER Tractor Implements

THE KELLAM & SHAFFER CO.

Maxon Road Schenectady, N. Y.

Representing

F. W. D.—4-Wheel Drive Auto Trucks

SKELTON—Hand Shovels

Contractors Small Tools and Equipment

JOHN REINER & CO., Inc.

290 Hudson St. New York, N. Y.

Representing

NOVO ENGINE CO.—Gasoline Engines
WISCONSIN MOTOR CO.—Gasoline Engines
POWER MFG. CO.—Diesel Engines
PERFEX CORPORATION—Radiators
Telephone WALKER 5-1795

BASHFORD-MCCORD CORP.

95 Crouch St. Rochester, N. Y.

Representing

Caterpillar Tractor Co.
"Caterpillar" Road Machinery
"Caterpillar" Combined Harvesters
Hi-Way Service Corporation
Killefer Manufacturing Co.
LaPlant-Choate Mfg. Co.
Williamette Iron & Steel Works
Athey Truss Wheel Co.
Gardner-Denver Co.
Euclid Road Machinery Co.
Blaw-Knox Ateco Equipment

BREWSTER & WILLIAMS, INC.

Contractors' Supplies and Equipment

306 S. Salina St. Syracuse, N. Y.

Representing

BUTLER Bins and Measuring Hoppers
C. H. & E. Contractors' Pumps, Hoists, Saw Rigs and Motor Mixers
HAISS Loaders, Excavators, Conveyors and Buckets
HOTCHKISS Steel Forms
LA CROSSE Tu-Way Trailers
LITTLEFORD Asphalt Heaters and Pools
RANSOME Mixers, Pavers, Towers and Chutes
SULLIVAN Compressors, Drills, and Hoists
THEW Shovels and Cranes
WATSON Dumpers

STUMPP & LEHTI

Contractors' Equipment

427 Manida Street Bronx, N. Y.

Representing

SPEEDER MACHINERY CORP.
Shovels — Cranes — Draglines
PIONEER
Sand and Gravel Plants
HERCULES
Power Units
Derricks - Hoists - Cableways
Clamshell & Dragline Buckets
Platform Trailers

HAVERSTICK & COMPANY, INC.

Ford and Spring Sts., Rochester, N. Y.

Representing

ORR & SEMBOWER—Mixers, Hoists and Boilers
LANSING CO.—Barrows, Scrapers, Mixers
INGERSOLL-RAND CO.—Portable Air Compressors
AMERICAN STEEL & WIRE CO.—Wire Rope
DOMESTIC ENGINE & PUMP CO.—Pump Rigs
DUFF MFG. CO.—Hydraulic & Screw Jacks
GOODYEAR—Mechanical Rubber Goods
GOULDS PUMPS, INC.
CONNEAUT SHOVEL CO.
MULCONROY CO.—Hose for every purpose
TOLEDO Torches and Hoses
AEROIL Heaters and Burners

BUELL EQUIPMENT CORP.

736 S. Beech St. Syracuse, N. Y.

Representing

AUSTIN MACHINERY CORP. — Trenchers, Backfillers
BROWNING CRANE & SHOVEL CO.—Crane Shovels
FAIRFIELD ENGINEERING CO.—Portable Conveyors
INDEFINITE PNEUMATIC TOOL CO.—Compressors, Tools
LEACH CO.—Concrete Mixers
MACWHYTE CO.—Wire Rope
NOVO ENGINE CO.—Engines, Hoists, Pumps
OWEN BUCKET CO.—Clamshell Buckets
Telephone 2-0043

MILLER EQUIPMENT CO., Inc.
127 Solar Street
SYRACUSE NEW YORK
Representing
BYERS
CLEVELAND (Rock Drills)
DOMESTIC
ERIE (Bins)
MEAD-MORRISON
SCHRAMM
"A Complete Service"

RALEIGH TRACTOR & EQUIPMENT COMPANY
108 W. Lane St. Raleigh, N. C.
Representing
"Caterpillar" Tractors
The Shovel Co.
LaPlant-Choteau Mfg. Co.
Euclid Road Machinery Co.
Athey Truss Wheel Co.
Towers & Sullivan Mfg. Co.
Heltzel Steel Form & Iron Works
Lakewood Engineering Co.
The C. S. Johnson Co.
The Hanson Clutch & Machy. Co.
(Hanson Excavators)

THE MECHANICAL SUPPLIES CO.
205-207 Vine St. Cincinnati, Ohio
Representing
LAKEWOOD—Screeds, Subgraders, Graderooters, Road Forms, etc.
NOVO—Gasoline Engines, Hoists, Pumps, etc.
WORTHINGTON—Air Compressors, Rock Drills, Paving Machines, etc.
GENERAL—Excavators and Shovels
JAEGER—Truck Concrete Mixers
KILLEFER—Road Rippers and Rooters, Road Discs, Scrapers, Etc.
SUPERIOR—Weighing Batches
NORTHERN—Conveyors, etc.
JONES-SUPERIOR—Portable Saw Tables, etc.
COLUMBUS—Elevators and Conveyors

SYRACUSE SUPPLY CO.
314 W. Fayette St. Syracuse, N. Y.
INGERSOLL RAND CO.—Compressors, Drills, Paving Breakers
NATIONAL EQUIP. CO.—Pavers, Power Shovels, Ditchers, Dampers, Backfillers, Mud Jacks, Mixers
CATERPILLAR TRACTOR CO.—Tractors, Road Graders
LA PLANT-CHOATE CO.—Hydraulic Bulldozers, Plows, Crawler Wagons
ATHEY TRUSS WHEEL CO.—Crawler Wagons
KILLEFER CO.—Road Rippers, Scrapers
BARNES MFG. CO.—Road and Drainage Pumps
WILLIAMSROPE WIRE ROPE CO.—Wire Rope
HAZARD WIRE ROPE CO.—Pre-formed Wire Rope
W. R. MEADOWS, INC.—Expansion Joint
CLYDE MFG. CO.—Hoists and Derricks
INSLEY MFG. CO.—Power Shovels, Concrete Placing Equipment
Member: Associated Equipment Distributors

CAROLINA TRACTOR & EQUIPMENT COMPANY
17th & Lee Streets Salisbury, N. C.
Representing
"Caterpillar" Tractors and Graders
"Euclid" Self-Loading Scrapers
"LaPlant-Choteau" Bulldozers
"Wonder" & "Marsh-Capron" Mixers and Hoists
"Day" Crushers

THE QUEEN CITY SUPPLY CO.
Pearl & Elm Sta. Cincinnati, Ohio
Representing
Bebe Bros.—All-steel Hand Hoists
Chain Belt Co.—Mixers, Pumps and Pavers
Ingersoll-Rand Co.—Compressors, Pneumatic Tools
Sauer Bros. Inc.—Cableway and Power Scraper Excavators
Clyde Iron Works—Hoisting Engines and Derricks
Williams—Buckets and Trailers
American Tubular Elevator Co.—Tubular Elevators
Wyoming Shovel Co.—"Red Edge" Shovels and Pickups
Sagamore Derrick Co.—Derricks
Cincinnati's Largest Equipment House
Member: Associated Equipment Distributors

ENGELS TRACTOR CO. INC.
Warehouse 334-336 N. Genesee St., Utica New York
Distributors
"P & H" Shovels and Equipment
"ALLIS-CHALMERS" Tractors
"F. W. D." Four Wheel Drive Trucks
"PIONEER" Crushing-Washing Equipment
and other leading accounts
Phones 28361, 22312

WE WOULD LIKE TO HAVE YOU HELP US
make this Directory of Dealers in construction equipment the most complete and accurate of its kind. Therefore, we would greatly appreciate any suggestions or corrections that you may have to offer.
CONTRACTORS AND ENGINEERS MONTHLY
470 Fourth Ave. New York

THE CLETRAC OHIO SALES CO.
East 193rd St. & Euclid Ave. Cleveland Ohio
Representing
The Cleveland Tractor Co.
The Essex Engine & Mach. Corp.
The Tractor Equipment Co.
The Davey Compressor Co.
The Killefer Mfg. Corp., Ltd.
The Cleveland Rock Drill Co.
Phones: Kenmore 0300-3697

McQuade & Bannigan, Inc.
829 Noyes St. Utica, N. Y.
Representing
Jaeger Machine Co.
Homelite Corp.
Ingersoll-Rand Co.
Cleveland Wheelbarrow Co.

THE WM. T. JOHNSTON CO.
"Only Complete Equipment House in Cincinnati"
210-212-214 Vine St. Cincinnati, O.
Austin Machinery Corp. Mall Tool Co.
Archer Iron Works N. P. Nelson Iron Works
Beaumont Mfg. Co. Orr & Sembrow, Inc.
Binks Mfg. Co. Omaha Drag Line Bucket
Cleveland Formgrader Co. Owived Acetylene Co.
DeWalt Product Co. Republic Iron Works
Fischer & Hayes Ropes and Sterling Wheelbarrow Co.
Steel Co. Sager Derrick Co.
Homelite Corp. Schramm, Inc.
Huber Mfg. Co. Western-Wheeled Scraper Co.
Humphreys Mfg. Co. Wood Shovel & Tool Co.
Knickbocker Co. Williamsport Wire Rope Co.
Member: Associated Equipment Distributors

THE CUYAHOGA EQUIPMENT CO.
3805 Perkins Ave. Cleveland, Ohio
Representing
McCORMICK-DEERING Industrial Tractors
W. A. RIDDELL Warco Power Graders
DETROIT Street Sweeper and Snow Brush
HUGHES-KEEGAN Rotashant Cranes
CLEVELAND Rock Drill Air Tools
DAVEY Air Cooled Compressors
COMPRESSOR Rental Service
TRACKSON Crawler Tractor, Hoists & Shovels
BLAIR Hydraulic Diggers
WARCO Semi Crawlers
BAY CITY Shovels
ROTARY Scrapers
Grader Blades, Scarifiers, Road Drags, Iron Mules, General Planters, Lead Clad Culvert Pipe
Phone Endicott 1800

American Hardware & Equipment Co.
CHARLOTTE NO. CAROLINA
Representing
Hotchkiss Steel Products Co.
Jaeger Machine Co.
Nevo Engine Co.
Koppel Industrial Car & Equip. Co.
Fruehauf Trailer Company
Burton Explosives Inc.
Independent Pneumatic Tool Co.

H. P. KELLY EQUIPMENT CO.
CINCINNATI, OHIO Kirby 2597
Representing
FOOTE CO.—Multi-Foot Pavers
GALION IRON WORKS—Road Rollers and Scrapers
HARNISCHFEGER CORP.—P & H Shovels, Cranes, Hoists, Draglines and Trenchers
OWEN BUCKET CO.—Clamshell Buckets
BARNES MFG. CO.—Pumps
HELTZEL STEEL FORM CO.—Road, Curb and Gutter Forms, Bins and Batches
FLEXIBLE ROAD JOINT CO.—Flexiplane and Cleft Plans
BROWN HOIST CO.—Hoisting Engines
MILWAUKEE CRANE & HOIST CO.—Hoist Cranes and Derricks
SIGNAL SERVICE CORP.—Traffic Signs and Electrical Devices
COLUMBUS CONVEYOR CO.—Belt and Bucket Conveyors

WE WOULD LIKE TO HAVE YOU HELP US
make this Directory of Dealers in construction equipment the most complete and accurate of its kind. Therefore, we would greatly appreciate any suggestions or corrections that you may have to offer.
CONTRACTORS AND ENGINEERS MONTHLY
470 Fourth Ave. New York

DIRECTORY OF DISTRIBUTORS

OHIO

THE DAY & MADDOCK CO.

Contractors' Equipment

8201 Almira Ave. Cleveland, O.

Representing

Continental Motors Corp. Gee. Hair Mig. Co.
Amer.-Terry Derrick Co. Concrete Surf. Machy. Co.
Knickbecker Co. Universal Crusher Co.
Blaw-Knox Co. Saueran Bros. Inc.
Remmel Manufacturing Co. Barnes Mig. Co.
Sterling Wheelbarrow Co. Sullivan Machinery Co.
American Hoist & Derrick Co. Wappat, Inc.
W. Tsooper & Sons Sawhill Mig. Co.
The Cleveland Formgrader Co.

LOOK THIS DIRECTORY OVER CAREFULLY

If you find any errors while checking over this directory will you please advise us at once, because it is our desire to keep it accurate and up-to-date at all times.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue New York

Industrial Engine Parts, Inc.
1053 E. 61st St. Cleveland, Ohio

Representing

Minneapolis-Moline Power Impl. Co. Twin Disc Clutch Co.
Climax Engineering Co. Fuller & Johnson Mfg. Co.
Northern Conveyor & Mfg. Co.
Stover Engine & Mfg. Co.
Scintilla Magnetic Co.
Wico Electric Co. Pierco-Governor Co.
Portable Power Tool Corp. Hercules Prod. Co.
Le Ro Co.
Vulcan S-H-R Valves
Bonney "CV" Wrenches
Hastings "Dubi-test" Rings

INTERSTATE EQUIPMENT SALES CORPORATION

Chester-Twelfth Bldg., Cleveland, O.

Representing

MANITOWOC ENGINEERING WORKS—Speedcranes, Shovels, Draglines, Trenchoes
MID - WEST Gas, Gas - Electric and Diesel-Electric Locomotives
OHIO Locomotive Cranes
JOS. F. KIESLER—Clam Shell Buckets

THE W. M. PATTISON SUPPLY CO.
777 Rockwell Ave. Cleveland, Ohio

Representing

Domestic Eng. & Pump Co.—Diaphragm and Force Pumps
Homelite Corp.—Portable Pumps, Generators and Blowers
James Machine Co.—Concrete Mixers and Trucks
Littleford Bros.—Asphalt Hoppers, Tanks and Oil Burners
Orr & Sammier, Inc.—Electric and Gasoline Hoists, Boilers
Patent Scaffolding Co.—Scaffolding Equipment
Sanger Derrick Co.—Derricks, Winches
Gustav Schaefer Co.—Automatic Formers
Wall Rope Works—High-Grade Manila Rope
Wickwire-Spence Steel Co.—Wire Rope
Worthington Pump & Machy. Corp.—Compressors, Pumps
Beede Bros.—Hand Hoists, Wrecker Cranes, Electric Jig Saws

Member: Associated Equipment Distributors

THE POPE EQUIPMENT CO.

Kent Pope, Pres.

4111 Euclid Ave. Cleveland, Ohio

Transportation Engineers

Klauer Manufacturing Co., Sno-Go
Pope Salt Spreader and Ice Melter
Traffic Signals, etc.
Rebuilt Trailers of All Kinds
Municipal Equipment
Storage

J. FRANK ROLLINGS

"The Crane Man"

2215 West Boulevard, Cleveland, Ohio

Representing

THE OHIO POWER SHOVEL CO. Shovels, Cranes, Drag Lines
THE OWEN BUCKET CO. Clam Shell Buckets
REX CONCRETE MIXERS
SCHRAMM AIR COMPRESSORS
Telephone—Evergreen 3359

W. T. WALSH EQUIPMENT CO.
12500 Berea Road Cleveland, Ohio

Representing

BYERS MACHINE CO.—Cranes and Shovels
BUTLER BIN CO.—Bins and Batches
"CATERPILLAR" Tractors
GARDNER-DENVER CO.—Compressors and Air Tools
"GYRO-CENTRIC" Crusher
HARVEY CO.—Road Rollers
JAEGER-LAKEWOOD Equipment
McKIERNAN-TERRY CO.—Hoisting Engines
LAMBERT-NATIONAL DIV.—Hoisting Engines
PIERCE EQUIPMENT CO.—Pierce "Bear" Rollers
ROSCO MFG. CO.—Roses, Distributor, Oilers
WELLMAN ENGINEERING CO.—Williams Buckets
WHITE MFG. CO.—Chausse-White Asphalt Plants, Heaters
Tel.: Lakewood 1024

MCNEILLY MACHINERY CO.
337 South High St. Columbus, Ohio

Representing

AUSTIN MACHINERY CORP.—Trenching Machines, Backfillers, Shovels and Cranes
Link Belt Co.—Electric, Gasoline Cranes, Shovels and Draglines
Blystone Mfg. Co.—Concrete, Mortar and Plaster Mixers
Dobbie Fdy. & Mach. Co.—Derricks and Fittings
Owen Bucket Co.—Clamshell Buckets and Digging Buckets
Morstrench Corp.—Wellpoint Systems, Pumps
McKiernan-Terry Corp.—Pile Hammers, Lambert-National Hoisting Engines
Sanger Derrick Co.—Derricks, Winches, etc.
Barnes Mfg. Co.—Pumps
Chain Belt Co.—REX Mixers and Pavers
Gardner-Denver Co.—Air Compressors, Tools
Continental Rubber Works—Air Hose, Suction Hose

The Osborne & Sexton Machy. Co.
Construction Machinery Division

Columbus Ohio

Representing

ARCHER IRON WORKS—Material Towers
BAY CITY SHOVELS, INC.—Gas Shovels
BEERE BROS.—Contractors' All-Steel Hand Hoists
CLEVELAND ROCK DRILL CO.—Pneumatic Drills, Paving Breakers, etc.
DOMESTIC ENGINE & PUMP CO.—Pumps, Hoisting Equipment
ECONOMY ROCK BIT CORP.—Detachable Bits
JONES SUPERIOR CO.—Gasoline Saws
SCHRAMM, INC.—Air Compressors
UNION IRON WORKS—Pile Driving Equip.
Rentals—Sales—Service

SMITH & ELLIOTT, INC.

644 North 4th St., Columbus, Ohio

Representing

THE LE BLOND-SCHAFT TRUCK CO. Motor Trucks
SPEEDER MACHINERY CORP.—Shovels, Cranes and Draglines
METALWELD INCORPORATED—Air Compressors
CLEVELAND ROCK DRILL CO.—Rock Drills, Paving Breakers and Drill Steel
HOMELITE CORPORATION—Portable Centrifugal Pumps, Lighting Plants and Blowers

C. L. STITH COMPANY

305 Franklin Bldg. Columbus, Ohio

Representing

FOOTE CO.—Paving Mixers
HELTZL STEEL FORM & IRON CO.—Forms, Etc.
Batcher Plants
HUBER MFG. CO.—Gardening Rollers
JAEGER MACHINE CO.—Concrete Mixers, Pumps, Etc.
LAKWOOD ENGINEERING CO.—Paving, Building and Industrial Equipment
FLEXIBLE ROAD JOINT MACHINE CO.—Compressed Joint Machine
LITTLEFORD BROS.—Tar and Asphalt Kettles
CLEVELAND ROCK DRILL CO.—Rock Drills, Paving Breakers
MCCLOSKEY TORCH CO.—Bombshell Torches
OWEN BUCKET CO.—Clamshell Buckets
SASGEN DERRICK CO.—Derricks, Winches

THE TAYLOR TRACTOR CO.

285 Cozzens St. Columbus, Ohio

Representing

CATERPILLAR TRACTOR COMPANY—Tractors, Real Machinery and Harvesters
Harnischfeger Sales Corp.
LaPlant-Choteau Mfg. Co.
Movo Engine Co.
Athey Three Wheel Co.
Kidder Manufacturing Corp.
Baker Manufacturing Co.
Euclid Road Machinery Co.
Willamette-Ersted Co.
Blaw-Knox Co. (Ateco Div.)
All Steel Products Mfg. Co.

THE W. W. WILLIAMS CO.

835 West Goodale St. Columbus, Ohio

Dayton

Cincinnati

Representing

The Koehring Company
Inslay Manufacturing Co.
T. L. Smith Co.
Parsons Co.
Cleveland Rock Drill Co.
The Sterling Motor Truck Co.
Hug Company
A. W. French & Co.
Blaw-Knox Co.
S. Flory Mfg. Co.
Iowa Mfg. Co.
McCormick-Deering Industrial Tractors
The Buhl Co.

Ohio Valley Machinery Co.

Marietta Ohio

Representing

International Harvester Co.
Trackson Co.
Wehr Co.
Hughes-Keenan Co.
Schramm, Inc.
Bay City Shovels, Inc.
W. M. Blair Mfg. Co.
Brookville Locomotive Co.
Muskogee Iron Works
Corley Mfg. Co.
Detroit Harvester Co.
Domestic Engine & Pump Co.
Chain Belt Co.

OHIO—PENNSYLVANIA

CONTRACTORS AND ENGINEERS MONTHLY

W. A. KUHLMAN & CO.

Contractors' Equipment

1804-6 Dorr Street Toledo, Ohio

Representing

Barnes Mfg. Co.
Bay City Shovels Inc.
Beach Mfg. Co.
Clyde Iron Works Sales Co.
Concrete Surf. Machy. Co.
Lakewood Engineering Co.
A. Lechner & Sons Rope Co.
Littleford Bros.
Construction Machy. Co.

Erie Steel Construction Co.
Sasgen Derrick Co.
Smith Engineering Works
Sterling Wheelbarrow Co.
Sullivan Machinery Co.
Jos. F. Kieler Co.
W. A. K. Column Clamps
Bates Mfg. Co.

BUNTING TRACTOR COMPANY
LA GRANDE, OREGON

Representing

Caterpillar Tractor Company
"Caterpillar" Tractors
"Caterpillar" Combines
"Caterpillar" Road Machinery
Athey Truss Wheel Company
LaPlant-Choate Mfg. Company
American Tractor Equipment Co.
Killefer Manufacturing Company
Williamette-Ersted Company
Williamsport Wire Rope Company

J. WALKER WILSON

Contractors' Machinery

P. O. Box 33

YOUNGSTOWN OHIO

Representing

KEYSTONE DRILLER CO.
E. J. McHARG & CO.
SULLIVAN MACHINERY CO.
THE BARNES MFG. CO.

Keystone Excavators
MultiFoot Road Pavers
Sullivan Portable Compressors and Tools
Barnes Pumps
Blaw-Knox Buckets, Forms, etc.

Telephone 3-5766

BALZER MACHINERY COMPANY

275 Pine Street Portland, Ore.

Representing

Marien Steam Shovel Co.—Large Power Shovels
Ohio Locomotive Crane Co.—Locomotive Cranes
Gardner-Denver Co.—Air Compressors, Drills, etc.
Wheeling Mold & Foundry Co.—Jaw Rock Crushers
Byers Machine Co.—Small Power Shovels
Niagara Concrete Mixer Co.—Vibrating Screens
Superior Engine Co.—Diesel Engines
S. D. LaCiale Co.—Dragline Buckets
Chicago Automatic Conveyor Co.—Conveyors, Loaders, etc.
J. S. Mundy Hoisting Engine Co.—Steam, Gas and Electric Hoists
Ohio Tractor Dump Wagons

THE BOARDMAN CO.

Oklahoma City Oklahoma

Representing

ALLIS-CHALMERS MFG. CO.
Crawler and Wheel Type Tractors
with Allied Equipment

ARMCO CULVERT MFRS. ASSN.
Armco Ingot Iron Culverts

KILLEFER MFG. CORP.
Dirt Moving Tools

CLYDE EQUIPMENT CO.

Contractors' Equipment and Supplies

Portland, Oregon Seattle, Wash.

Atlas Imperial Diesel Eng. Co. Sterling Wheelbarrow Co.
Clyde Iron Works Sullivan Machinery Co.
Homelite Corp. Tracy Engr. & Mfg. Co.
Jaeger Machine Co. McKiernan-Terry Corp.
Lincoln Electric Co. Klauber Mfg. Co.
Bucyrus-Erie Co. Foote Company, Inc.
Geo. Haiss Mfg. Co., Inc. Allis-Chalmers Mfg. Co.
Sauerman Brothers La Ro Co.
Lakewood Engineering Co. Iowa Mfg. Co.
Beebe Bros.

Member: Associated Equipment Distributors

Leland Equipment Company

Tulsa and Oklahoma City, Oklahoma

Distributors for

NATIONAL EQUIPMENT CORP.—Concrete Mixers, Pavers
Excavators, Cranes, Trenching Machines and Back-Fillers
INSLY MFG. CO.—Shovels, Cranes, Backhoes, Concrete
Cutting, Towers and Buckets

BLAW-KNOX CO.—Bins, Forms, Buckets

IOWA MFG CO.—Rock Crushing Plants

SCHRAMM, INC.—Air Compressors, Pneumatic Tools

MCKIERNAN—Torches

MCKIERNAN-TERRY CORP.—Pile Hammers, Steam, Elec-
tric and Gasoline Hoists

G. H. & E. MFG. CO.—Portable Saw Rigs, Hoists and Pumps,
Conveyors, Loaders, Wheelbarrows, Tar Kettles

COMPLETE LINE OF TRUCK EQUIPMENT

FEENAUGHTY MACHINERY CO.320-338 Belmont St. Portland, Ore.
Spokane — Seattle — Boise

Representing

American Saw Mill
Machinery Co.
Chicago Pneumatic Tool Co.
Construction Machy. Co.
Four Wheel Drive Auto Co.
Galon Iron Works and Mfg.
Co.
Foote Bros. Gear and
Machine Co.
Littleford Bros.

Penna. Boiler Works
Pickering Governors
Sidney Steel Scrapers
Sterling Wheelbarrows
Thew Shovel Co.
Universal Crane Co.
Diamond Iron Works
Birdsell Mfg. Co.
Avery Power Machinery Co.
Massey-Harris Co.

Member: Associated Equipment Distributors

MILLER-SANFORD TRACTOR CO.Eugene — Klamath Falls — Medford
Roseburg
OREGON

Representing

Caterpillar Tractor Co.
Tractors — Graders — Harvesters
American Tractor Equipment Co.
Killefer Manufacturing Co.
Willamette-Ersted Co.
Euclid Road Machy. Co.
LaPlant-Choate Co.

Howard-Cooper Corporation
Portland — Seattle — Spokane — Twin Falls

Representing

International Harvester Co. Orton Crane & Shovel Co.
(McCormick-Deering Industrial Tractors)
Austin Machinery Corp. Rotary Snow Plow Co.
Barber-Green Co. Schramm, Inc. (Compressors)
Cleveland Rock Drill Co. Universal Power Shovel Co.
The Oregon Co. (Shovels) Buda Co. (Diesel & Gas Engines)
Hughes-Keanan Co. Baker Mfg. Co.
Leach Co. Walter Motor Truck Co.
Norberg Mfg. Co. (Symons) Seagrave Corp.
Crushers Pacific Goodyear Rubber Co.

Member: Associated Equipment Distributors

MITCHELL, LEWIS & STAVER CO.
330 E. Morrison St. Portland, Ore.

Representing

ANTHONY CO.—Hydraulic Dump
Bodies
SOLANO IRON WORKS—"Pacific"
Revolving Tractor Scrapers, Fresno
Scrapers
THE NEW WAY MOTOR CO.—Air-
Cooled Engines
STOVER MFG. & ENGINE CO.—
Gasoline Engines
THE F. E. MYERS & BROTHER CO.
—Power Pumps

**HAVE YOU CHANGED YOUR
LOCAL ADDRESS?**

Sometimes in the rush of moving to a
new location you fail to send us your
new address. And as we are anxious
to get your copy of the magazine to
you on time do not put off writing us.
Thank you.

CONTRACTORS AND ENGINEERS
MONTHLY

470 Fourth Ave. New York

Western Road Machinery Co.

220-222 E. Water St. Portland, Ore.

Representing

SMITH ENGINEERING WORKS—Telsmith Crushers
MAIDEN IRON WORKS—Portable Asphalt Paving Plants
WORTHINGTON PUMP & MACHINERY CORP.—Worthington Compressors, Worthington-Gillman Air Tools
OHIO POWER SHOVEL CO.—LIMA 1 & 1 1/4 yd. Shovel
HUBER MFG. CO.—Road Rollers
J. D. ADAMS CO.—Adjustable Leaning Wheel Graders
HIGHWAY—Heavy-Duty Machinery Trailers
MUNICIPAL SUPPLY CO.—Oil Distributors
GENERAL EXCAVATOR CO.—General Half Yard Shovel
NOVO ENGINE CO.—Engines, Hoists and Pumps

Member: Associated Equipment Distributors

G. M. STULL COMPANY

Chester Pennsylvania

Representing

Fordson Tractors
Universal Power Shovels
Road Machinery
Contractors' Supplies
Diamond Tires

"Equipment and Supplies for the Fordson"

Any errors?

If you will find any errors
on these pages, will you
please notify us so we can
correct them?

Address

CONTRACTORS AND ENGINEERS
MONTHLY

470 Fourth Avenue New York

DIRECTORY OF DISTRIBUTORS

PENNSYLVANIA

BARNARD TRACTOR & EQUIPMENT CO., INC.

825 Paxton Street, Harrisburg, Pa.

Representing

BAKER—Maneys and Drags
RUSSELL—Drags, Scoops
DOMESTIC—Pumps
HIGHWAY—Trailers
MIAMI—Trailers, Scrapers
W.K.—Pipe Handling Equipment
DETROIT—Road and Street Brushes
WILLIAMS—Clam Shell Buckets
MILBURN—Carbide Lights, Paint Spray Outfits

GILES & RANSOME

17th St. & Sedgley Ave., Philadelphia

RANSOME CONCRETE MACHINERY CO.—

Concrete Mixers and Appliances

BLAW-KNOX CO.—Clam-shell Buckets, Steel

Forms, Steel Buildings, Steel Bins

CATERPILLAR TRACTOR CO.—Tractors and

Road Machinery

RICHMOND SCREW ANCHOR CO.—Concrete

Specialties

THE BARNES MFG. CO.—Centrifugal Dia-

phragm and Force Pumps

NORTHWEST ENGINEERING CO.—Gasoline

Crane and Shovels

ORD—Road Finishing Machine

CLYDE—Hoisting Engines and Derricks

GARDNER-DENVER—Compressors and Tools

TOLEDO WHEELBARROW CO.—Wheelbarrows

Member: Associated Equipment Distributors



SERVICE SUPPLY CORPORATION

20th and Venango Sts.
PHILADELPHIA, PA.

Chain Belt Co.—Rex Pavers, Mixers, Truck Mixers
Owen Bilt Co.—Clamshell Buckets
Lidgerwood Mfg. Co.—Hoists, Winches, Cableways
Dravo Equipment Co.—American Tubular Towers
Hercules Co.—Road Rollers
International Harvester Co.—Industrial Tractors
Allis-Chalmers—Monarch Tractors
Bay City Shovels, Inc.—Shovels, Cranes and Cranes
W. A. Riddell Co.—Graders, Scrapers & Tracks for Tractors
Butler Bin Co.—Bins, all sizes
Chicago Pneumatic Tool Co.—Air Compressors and Tools
Littleford Bros.—Asphalt and Tool Heaters
Member: Associated Equipment Distributors

BOWEN MACHINERY CO.

Excavating—Construction—Industrial
EQUIPMENT

1126 N. Delaware Ave. Philadelphia, Pa.

Distributors for

BYERS Shovels and Cranes
McKERNAN-TERRY Pile Hammers and Der-
ricks
LAMBERT-NATIONAL Hoists, Car Pullers,
Cableways
DAVEY Air Cooled Compressors
WILLIAMS Clamshell Buckets, Heavy Duty
Trailers
TAYLOR-WHARTON Manganese Shovel and
Bucket Teeth

LODER & SHARP, INC.

"Everything for Roads"
32nd Street and Powelton Avenue
PHILADELPHIA, PA.

Representing

F. W. D. Trucks
BATES Tractors
ROME Graders
RELIANCE Crushers
HUBER Rollers
WHEELING Pipe

DE HUFF AND HOPKINS

261 N. Broad Street Philadelphia

Representing

SPEEDER MACHINE CORPORATION
½ yd., ½ yd. and 1½ yd. full revolving Shovels & Cranes
Motor Truck Cranes
EASTON CAR CONSTRUCTION CO.
Dump and Flat Cars for Construction Work
Concrete Handling Dump Bodies
Turntables—Portable—Track—Rails, etc.
BROOKVILLE LOCOMOTIVE CO.
Ford and McCormick-Deering Type Gasoline Locomo-
tives
MILWAUKEE LOCOMOTIVE MFG. CO.
Gasoline Locomotives, 4 to 30 tons
O. K. CLUTCH & MACHY. CO.
Air Compressors & Hoisting Machinery
Portable Belt Conveyors—Valves and Sluice
Gates—Steel Plate Work

MAEKY MACHINE WORKS

632 Race Street
Philadelphia Penna.

Representing

The Climax Engineering Co.
Twin Disc Clutch Co.
Modern Equipment Co.

EDELEN & BOYER COMPANY

Office and Warehouse
230 N. 23rd St. Philadelphia Penna.

Distributors for

Lime "101" Shovel, Crane &
Trencher
General Shovels, Cranes,
Skimmers, Back Hoe
Multi Footed Pavers
Flay Hoists
Freeman Turntables
Holzhei Steel Road Form
Holzhei Sidewalk & Gutter
Forms, Bins and Batches
Sapen Derricks & Elevators
Welder Mixers and Pumps
Miles Block Machines
Pulsometer Steam Pumps

HOWARD W. READ CORP.

800 N. Delaware Ave., Philadelphia, Pa.

Distributors

DOMESTIC ENGINE & PUMP CO.—Pumps
HAISS—Buckets
JONES SUPERIOR—Saw Rigs
LINK-BELT—Cranes and Shovels
MEAD-MORRISON—Cranes & Shovels
PENNA. BOILER WORKS—Boilers
AUSTIN-WESTERN ROAD MACHINERY CO.
—Rollers, Graders, etc.
Additional Equipment in Stock:
MCKERNAN-TERRY—Hammers
INGERSOLL-RAND—Compressors
UNIVERSAL—Truck Cranes

C. H. ARNOLD COMPANY, Inc.

Road and Street Machinery
Contractors' Equipment

726-730 Park Bldg. Pittsburgh, Penn.

Representing

THE FOOTE COMPANY—Multicots Paving Mizer
BLAW-KNOX COMPANY—Road and Sidewalk Form
Bins, OD Concrete Rail
Finishing Machines
SULLIVAN MACHY. CO.—Compressors and Tools
LITTLEFORD BROS.—Tar and Asphalt Heating
Equipment
GENERAL EXCAVATOR CO. Gas Shovels, Cranes and
Draglines
BARNES MFG. CO.—Force Feed and Diaphragm
Type Pumps
J. D. ADAMS CO.—Earth Moving Equipment

HARRY J. FERGUSON

Complete Labor-Saving Material-
Handling Equipment

626 Race Street, Philadelphia, Pa.

Representing

SPROUT, WALDRON & CO., INC.—Material-
handling Equip., Elevating & Conveying
Machy., Bulk Cement Handling Equip.
W. A. JONES FOUNDRY & MACHINE CO.—
Spr-Herringbone and Worm Speed Reducer
MOLINE MALLEABLE IRON CO.—Malleable
Iron Chain and Sprockets
CHICAGO AUTOMATIC CONVEYOR CO.—
Portable Loaders, Unloaders, Portable Belt
Conveyors

REEVES-McCORMICK, Inc.

5317 No. 2nd St. Philadelphia, Pa.

Representing

FORDSON—Tractors, all accessories
WEHR—Graders and rollers
TRACKSON—McCormick - Deering Crawlers,
bulldozers and shovels
STERLING—Tractor cranes and tugs
NOVO—Engines, pumps and hoists
ERIE—Bins, buckets, aggreometers
CONNERY—Kettles, asphalt heaters
INDEPENDENT—"Thor" Air Compressors,
tools

BECKWITH MACHINERY CO.

6550 Hamilton Ave. East Liberty
Pittsburgh, Pa.

Representing

BURCH Car Unloaders, Stone Spreaders
BYERS Shovels and Cranes
"CATERPILLAR" Tractors, Graders and Trac-
tor Equipment
CLEVELAND Air Tools
DAVEY Air Compressors
DOMESTIC Pumps
McKERNAN-TERRY CORP. Pile Hammers
NAGLE Boilers
NATIONAL-LAMBERT Hoists, Derricks
PULSOMETER Pumps
UNIVERSAL Form Clamps

BRINKER SUPPLY COMPANY
6545 Hamilton Ave. (East Liberty) Pittsburgh, Pa.
Contractors' Equipment—Municipal Supplies

Representing

WARCO
HUBER
F. W. D.
LINK-BELT
ATES
BURCH
ROME
SCHRAMM
UNIT
TONCAN
GOODRICH
CONNERY
McCORMICK-DEERING
Street Signs and Signals

- One Man Power Graders
- Motor Road Rollers
- Four-Wheel Drive Trucks
- Shovels, Drag Lines, Cranes
- Steel Mules
- Car Loaders and Spreaders
- Drawn Road Graders
- Air Compressors
- Gasoline Shovels
- Culvert Pipe
- Fire Hose
- Tar and Heating Kettles
- Tractors and Equipment

POWELL-DAVIES TRACTOR AND EQUIPMENT COMPANY, INC.

152 Horton St. Wilkes-Barre, Pa.

Representing

"CATERPILLAR" Tractors and Road Machinery
LaPLANT-CHOATE Wagons, Bulldozers and Snow Plows
ATHLETIC WHEEL Trailers
EUCLID Wagons and Bulldozers
BAKER-MANEY Wheel and Roll-Over Scrapers
WILLAMETTE-ERSTED Tractor Hoists and Logging
Equipment
DAY Crushers
DAVEY Air Compressors
W-K-M Pipe Handling Equipment
KILLEFER Road and Agricultural Tools
UNIT Shovels
DOMESTIC Pumps

INTER-STATE EQUIPMENT CO.

1105 S. Main St. Aberdeen, S. Dak.

Representing

"CATERPILLAR" Tractors and Road Machinery
LaPLANT-CHOATE Tractor Drawn Dump
Wagons—Bull Dozers—Snow Plows
EUCLID Rotary Scrapers, Wagons, etc.
KILLEFER Road Tools
ATECO Dirt Movers
DAVEY Compressors
DAY Crushers
WAUSAU Snow Plows

A. H. KRIGGER & COMPANY

4 E. Carson St. Pittsburgh, Pa.

Representing

HERCULES Gasoline Engines & Parts
REED-PRENTICE Sawing Machines
HUMDINGER Pumps
STOVER Engines
CLIMAX Engine Parts
GROUNDHOG Tractor
UNIVERSAL Gas Electric Units

HARDIE Sprayers
JACOBSEN Power Mowers
CLIMAX Motor Parts
LE ROI Engines and Parts
DETROIT HARVESTER Tractor Mowers
HARDIE High Pressure Pumps
Rock Crushers and Coal Crushers

Industrial and Farm Gasoline Engines

CAROLINA CONTRACTORS EQUIPMENT & SUPPLY COMPANY

P. O. Box 576 Columbia, S. C.

Representing

J. D. Adams Co.
Allis-Chalmers Mfg. Co.
Koehring Co.
Ingersoll Mfg. Co.
E. D. Emco Co.
C. H. & E. Mfg. Co.
Sullivan Machy. Co.
Hullman Steel Form & Iron Co.
T. L. Smith Co.
The Parsons Co.
Owen Bucket Co.

Stoltz "Junior" Stone Spreaders
Ref Star Wheelbarrows
St. Paul Hydraulic Hoist Co.
Monarch Road Machy. Co.
Metal Lubricant Co.
McKinnon-Terry Corp.
The Geo. Hales Mfg. Co.
Baker Mfg. Co.
Fulton Bag & Cotton Mills
Happ Bros.
Erie Road Rollers

Central Tractor & Equipment Co.

Sioux Falls and Huron, So. Dak.

Representing

"CATERPILLAR" Tractors
"CATERPILLAR" Road Machinery
"CATERPILLAR" Combines
LaPLANT-CHOATE Dump Wagons, Snow Plows, Bulldozers and Scrapers
KILLEFER Scrapers and Road-Rippers
ATLAS Graders and Scrapers
WAUSAU Tractor and Truck Snow-Plows
ROTARY Snow-Plows and Snow-Loaders
ATECO Dirt Movers, Bulldozers and Scarifiers

MARTIN J. O'BRIEN CO., INC.

512 Columbia Bldg.

Pittsburgh, Penna.

Nordberg-Butler Underground Shovels
Standard Gage Track Shifters Narrow Gage
Nordberg Railway Track Equipment
Bay City Tractor Shovels and Cranemobiles
Bay City Full Revolving Shovels up to 1½ yard
Whitcomb Locomotives, Gas, Electric, Diesel
The Patterson Gyro-centric Crusher

GIBBES MACHINERY COMPANY

Columbia South Carolina

Representing

CLEVELAND TRACTOR CO.—Tractors
AMERICAN SAW MILL MACHINERY CO.—Woodworking Machinery and Equipment
BAY CITY SHOVELS, INC.—Shovels, Cranes, Draglines and Tractor Shovels
UNION STEAM PUMP CO.—Compressors and Pumps
SKELTON SHOVEL CO.—Shovels and Scoops
TOLEDO PRESSED STEEL CO.—Toothed Torches
COLUMBUS IRON WKS. CO.—Grade Blades
MARION STEAM SHOVEL CO.—Shovels, Gas, Electric, Diesel or Steam
DOMESTIC PUMP CO.—Pumps, Road, etc.
ATLAS SCRAPER CO.—Rotary Wheel Scrapers
WELLMAN ENGINEERING CO.—Buckets, Heavy-Duty Trailers

Also
Road Graders and Rollers, Boilers, Steam and Gasoline Engines

RAPID TRACTOR & EQUIPMENT COMPANY

Corner Main St. and Maple Ave.
RAPID CITY SOUTH DAKOTA

Representing

Caterpillar Tractor Co. Detroit Harvester Co.
Killefer Mfg. Co. National Equip. Corp.
LaPlant-Choate Mfg. Co. Wausau Snow Plow Co.
Pioneer Gravel Equip. Williamette-Ersted Co.
Mfg. Co. Athey Truss Wheel Co.
C. H. & E. Mfg. Co. Euclid Road Machy. Co.
Inasley Mfg. Co. Schramm, Inc.
Cleveland Rock Drill Co.

W. J. DOORLEY

Scottdale Penna.

Representing

Asphalt Equipment Co.
Good Roads Equipment Corp.
"All kinds of Asphalt Equipment"

JEFF HUNT ROAD MACHINERY CO.

Columbia So. Carolina

Representing

"CATERPILLAR" Tractors
"CATERPILLAR" Road Machinery
REX Mixers, Pavers, Pumps
EUCLID Scrapers & Wagons
KILLEFER Farm Machinery
Road Tools
BURCH Loaders & Conveyors
ORD Finishing Machine
Buckets
BLAW-KNOX Road Forms, Bins
"RED EDGE" Shovels
HVASS Street & Road Equipment
PIONEER Gravel Equipment

AUSTIN Trench Machines
CLEAVER Tank Car Heaters
CLYDE Hoists
ATHLETIC Trailers
HERCULES Red Strand Cable
WIARD Plows, Roadrippers, Scrapers
BLAW-KNOX Road Forms, Bins
Hoists
P & H Shovels, Cranes, etc.
ATECO—Scrapers
CLEVELAND Formgraders, Straight Edges, etc.

WESTERN MATERIAL CO.

Sioux Falls, S. Dak.

BARNES Pumps
BLACKHAWK Jacks
BLAW-KNOX CO.
BURCH Stone Spreaders
CLEAVER Tank Car Heaters
CLYDE Hoists
CONSTRUCTION MACHINERY CO.
DETROIT Mowers
HERCULES Motors
HUBER Road Rollers
INDIANA Trucks
LENHART Wagons
LINK-BELT Shovels
LITTLEFORD BROS.
McCLOSKEY Torches
M & M Form Devices
MASEN Pre-Mixing Plants
Member: Associated Equipment Distributors

NOVO Engines
PAGE Buckets
PHILIP CAREY CO.
PIONEER Gravel Equipment
PORTABLE MACHY. CO.
QUAKER State Lubricant
ROTARY Snow Plows
ROSCO Oil Distributors
RUSSELL Plows & Scrapers
SASGEN Derricks
SOLVAY Calcium Chloride
STERLING Wheelbarrows
VULCAN Pig Hammer
SCHRAMM, INC. Air Comp.
WOOD "Molly" Shovels
WAUSAU Snow Plows
YELLOWSTRAND Cable

ENSMINGER AND COMPANY
75-77 Hazel Street Wilkes-Barre, Pa.

Representing

JAEGER Concrete Mixers, Towers, Pumps
LINK-BELT Shovels, Cranes, Backfillers
BAY CITY Tractor Shovels
SCHRAMM, INC. Air Compressors
SOUTH BEND Lathe
MUNDY Hoisting Equipment
BLAW-KNOX Buckets
DOBIE Derricks and Winches
NEW HOLLAND Rock Crushers
HIGHWAY SERVICE Chip Spreaders
JACKSON Wheelbarrows and Concrete Carts
AMERICAN Saw Mill Machinery
ADAMS Graders
REED-PRENTICE Timber Saws
CLEVELAND Rock Drills, Air Tools
SHUNK MFG. CO.—Tractor Dump Wagons
HOTCHKISS Road Forms

STANDARD MACHINERY & EQUIPMENT COMPANY

SPARTANBURG, S. C.

Representing

CUMMER Asphalt Plants
BUFFALO-SPRINGFIELD Rollers, Scarifiers
BUCKRUS-ERIE Shovels
MULTIFOOTE Pavers
BUTLER Bins and Hoppers
HUG Dump Trucks
BARBER-GREENE Loaders, Conveyors and Ditchers
LAKEWOOD Finishers, Sub-grade, and Chuting
HANOV Stock Cleaners, Bolers
JAEGER Mixers and Pumps
INGERSOLL-RAND CO.
LITTLEFORD Asphalt Tools

FREEMAN Turntables
HELTZEL Road Forms, Trailers and Bridges
WESTERN Wheeled Scrapers, Drags, Plows
DOMESTIC Pumps & Hoists
SASGEN Derricks
SHUNK MFG. CO. Blades
WYOMING Shovels
STERLING Wheelbarrows
CLEVELAND Torches
WILLIAMSPT Wire Rope
BAKER Builders
LINDE Carbic Lights
BERG Concrete Finishers
PARKS Saw Rigs
Member: Associated Equipment Distributors

NIXON-HASSELLE CO.

Contractors' Equipment CHATTANOOGA TENNESSEE

Representing

BLAW-KNOX Buckets and Form
DOBIE Derricks
HANSON Excavators & Cranes
MUNDY Hoists
EASTON Dump Bodies, Cars and Track
BARBER-GREENE Loaders and Conveyors
INGERSOLL-RAND Compressors
REX Mixers, Pavers and Pumps
NORTHWEST Cranes and Shovels
ARCHER Tower and Spouting Equipment
VULCAN Gasoline Locomotives
McCORMICK-DEERING Tractors
TRACKSON Tracks, Cranes, etc.
WRCO Graders
NEWPORT Culvert Pipe
etc.
Member: Associated Equipment Distributors

DIRECTORY OF DISTRIBUTORS

TENNESSEE—UTAH

R. L. HARRIS, Inc.

709-15 Cooper St. Knoxville, Tenn.

Representing

"CATERPILLAR" Tractors and Road Machinery
ATHHEY Truss Wheel Wagons
BAKER-MANEY Self Loading Scrapers
BUCYRUS-ERIE Shovels and Cranes
CHICAGO-PNEUMATIC Air Compressors
DOMESTIC Pumps and Hoists
ECLID Bulldozers
HUEBER Road Rollers
HELTZEL Forms, Bins and Batchers
UNIVERSAL Rock Crushers
WILLIAMS Buckets and Trailers

CHOCTAW CULVERT AND MACHINERY COMPANY

Second & Butler Sts. Memphis, Tenn.

Representing

Jaeger Machine Co.
Sterling Wheelbarrow Co.
Littleford Brothers
Buffalo-Springfield Roller Co.
Lakewood Engineering Co.
The Foote Co.
Owen Bucket Co.
Butler Bin Co.
Beach Mfg. Co.
Bebe Bros.

Member: Associated Equipment Distributors

NASHVILLE TRACTOR & EQUIPMENT CO.

322 Fifth Ave., S. Nashville, Tenn.

Representing

CATERPILLAR Tractors and Road Machinery
EUCLID Wagons & Scrapers
GARDNER-DENVER Air Compressors & Tools
SPEEDER Shovels & Cranes
LA PLANT-CHOATE Bulldozers, Wagons & Scrapers
IOWA MFG. COMPANY Crushers, Plants, Mixing Plants
KILLEFER Scrapers

Pumps

Wilson-Weesner-Wilkinson Co.

Nashville Tennessee

NATIONAL EQUIPMENT CO.

Koehring Co. T. L. Smith Co.
Inaley Mfg. Co. Ingersoll-Rand Co.
Allis-Chalmers Mfg. Co. Littleford Bros.
Blaw-Knox Co. McKiernan-Terry Corp.
C. H. & E. Mfg. Co. Western Wheeled Scraper Co.
Good Roads Machy. Co. Wyoming Shovel Works

Warehouse Stocks of Service
NASHVILLE — KNOXVILLE
MEMPHIS

Member: Associated Equipment Distributors

J. W. BARTHOLOW COMPANY

Machinery, Contractors' Equipment, Supplies
1221 So. Lamar St. Dallas, Texas

RANSOME Mixers, Chutes
GLYDE Hoists & Derricks
BLYSTONE Plaster Mixer
DOMESTIC Pumps
WYOMING Shovels, Pickups
GENERAL Wheelbarrows
WIARD Plows
CYCLONE Drills
SULLIVAN Air Compressors
McKERNAN-TERRY File Hammers
FARQUHAR Boilers

ROOS Shovels

NORTHWEST Cranes

BLAW-KNOX Buckets

RANSOME Pavers

ORD Concrete Finishers

ACME Rollers, Graders

HAISS Loaders

BLAW-KNOX Bins, Forms

TELSMITH Crushers, Etc.

AUSTIN Ditchers

BAY CITY Truck Cranes

BROWNING-FERRIS MACHY. CO.
205 Exposition Ave. Dallas, Texas
Houston—Austin—San Antonio

Representing

Buffalo-Springfield Roller Co. (Dallas & Amarillo)
Barber-Green Co. (Dallas & Amarillo)
Lakewood Engineering Co.
Sterling Wheelbarrow Co.
Jaeger Machine Company
Heltzel Steel Form & Iron Co.
Ingersoll-Rand Co.
Foote Co.—Pavers
Homelite Corp.—Pumps
Littleford Bros.
Universal Crushers
Tew Shovel Co.
Trackson Co. Crawlers, Hoists
McCormick-Deering Tractors
Cleveland Crawler Tractors

CLARK & BURROWS, Inc.
3600 Commerce St., Dallas, Texas

Representing

KOEHRING—Pavers, Mixers, Power Shovels, Cranes, Draglines, Dumpsters
INSLEY—Excavators, Concrete Placing Equipment, Cars, Buckets, Derricks, Shovel Finisher
T. L. SMITH—Tilting and Non-Tilting Mixers, Pavers
PARSONS—Trench Excavators, Backfillers, Trailers
C. H. & E.—Portable Saw Rigs, Pumps, Hoists
KWIK-MIX—Mixers; Concrete, Plaster and Mortar
C. S. JOHNSON—Material Storage Bins and Batchers
HERCULES—Rollers, Crawl Tractor Roller
METAL FORMS CORP.—"Metaforms"
CONSOLIDATED IRON-STEEL MFG. CO.—Cleveland Road Torch
WORTHINGTON—Portable Compressors and Air Tools

A Complete Line of Construction Equipment

ALAMO IRON WORKS

130 Santa Clara St., San Antonio, Tex.

Koehring Shovels, Cranes
Insley Shovels, Cranes
Koehring Pavers, Mixers
Smith Pavers, Mixers
Parsons Ditchers, Backfillers
Koehring Dumpsters
Telsmith Crushers, Screens
Schramm Portable Compresors
Gardner Stationary Compressors
Orr and Sambover Hoists
C. H. & E. Saw Rigs
H & A Woodworking Machinery
Black & Decker Electric Saw
Williamsport Wire Rope

Sidney Woodworking Machinery
Haiss Loaders and Conveyors
Butler Bins
Williams Buckets and Bins
Duty Trailers
Red Star Barrows
Molly Shovels
Evirnude Pumps
Waugh Rock Drills
Black & Decker Electric Handmowers
Black & Decker Electric Saw
Williamsport Wire Rope

LEWTER F. HOBBS, INC.
"Any machine for the Contractor since 1898"
NORFOLK, VIRGINIA

KNICKERBOCKER Mixers
STROUDSBURG Hoists
CHICAGO Compressors
U. S. ASPHALT Plants
FAIRFIELD Conveyors
FARQUHAR Boilers
FREEMAN Turntables

Other Well Known Lines

GRAHAM B. BRIGHT

1106 Electric Bldg. Richmond, Va.

Representing

Acme Road Machinery Co.
American Wire Fence Co.
Bay City Foundry & Machine Co.
The Byers Machine Co.
J. C. Cleaver Company
Easton Car & Construction Co.
Smith Engineering Works

Davey Compressor Co., Inc.
E. D. Etnyre & Company
George Haiss Mfg. Company
The Parsons Company
MacWhye Company
Milwaukee Locomotive Mfg. Co.
Smith Engineering Works

HAVE YOU CHANGED YOUR LOCAL ADDRESS?

Sometimes in the rush of moving to a new location you fail to send us your new address. And as we are anxious to get your copy of the magazine to you on time do not put-off writing us. Thank you.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave. New York

R. B. EVERETT & CO.

3112-18 Harrisburg Blvd. Houston, Texas

BLAW-KNOX Road Plant Equipment, Bins & Clamp Shell Buckets
CHAIN BELT Concrete Mixers, Pumping, etc.
CLYDE Heating Machy.
"P. & H." Goliadine Cranes
UNIVERSAL Form Clamps
McKERNAN-TERRY File Hammer, etc.
NOVO Engines, Hoists
CONNERY Asphalt Kettles, Tools
WYOMING Shovels, Picks
Member: Associated Equipment Distributors

GALION Graders & Main tainers

SAUERMAN Cableways

CLEVELAND Wheelbarrows

BATES Wire Tie

PISSOMETER Steam Pumps

PATENT Safety Swinging Scolding

TRU-LAY Wire Ropes

BUFFALO SPRINGFIELD Road Rollers

SULLIVAN Compressors

STROUD Elevating Graders

ETNYRE Asphalt Distributors

EARNEST BROS.

14 N. 7th Street Richmond, Va.

Representing

N. E. C.
KOEHRING—Mixers, Pavers, Shovels, Mud Jack, Sub-grade Planer
T. L. SMITH CO.—Mixers, Pavers, Trail Mixers
C. H. & E.—Saw Rigs, Pumps, Hoists, Mortar Mixers, Material Elevators, 6" Ditcher
INSLEY—Shovels, Cranes, Concrete Chaining Plants, Towers, Buckets, Derricks
JOHNSON—Steel Bins, Batchers, Bulk Cement Plants, Ready Mix Plants
OWEN—Clamshell Buckets, Rehandling and Digging
DOW—Calcium Chloride
PORTABLE POWER TOOL CORP.—Electric Saws and Drills

THE C. H. JONES COMPANY

Construction and Industrial Equipment

134-140 Pierpont Ave. Salt Lake City, Utah

Representing

JAEGER MACHINE CO.—Concrete Mixers, Hoists & Pump
GALION IRON WORKS & MFG. CO.—Road Grader and Rollers
BAY CITY SHOVELS, INC.—Power Shovels, Draglines and Cranes
OHIO POWER SHOVEL CO.—Lima "101" Shovels, Draglines and Cranes
DIAMOND IRON WORKS, INC.—Gravel Crushing and Screening Plants
THE FOOT CO., INC.—Multifoot Paving Mixers
LINK BELT CO.—Elevating and Conveying Machinery
CLEVELAND TRACTOR CO.—Crawler Tractor
CHICAGO AUTOMATIC CONVEYOR CO.—Portable Belt and Drag Conveyors
BAKER MFG. CO.—Truck and Tractor Snow Plow

PHILLIPS MACHINERY CO.
900 East Cary St. Richmond, Va.
Representing
RANSOME CONCRETE MACHINERY CO.
CLYDE SALES CO.
DEWALT PRODUCTS CORP.
ERIE STEEL CONSTRUCTION CO.
SAUERMAN BROTHERS, INC.
CHICAGO PNEUMATIC TOOL CO.
STEPHENS-ADAMSON MFG. CO.
METAFORMS CORPORATION
ROGERS BROTHERS CORP.
GENERAL EXCAVATOR CO.
AEROIL BURNER CO.
BARNES MANUFACTURING CO.
MANITOWOC ENGINEERING WORKS
BRODERICK & BASCOM ROPE CO.
ARCHER IRON WORKS
Also many other lines of Contractors' Equipment

VIRGINIA TRACTOR CO., Inc.

916 North Boulevard Richmond, Va.

*Dealers in Equipment, Attachments
and Implements for use with*

"CATERPILLAR" Tractors
"CATERPILLAR" Graders
"CATERPILLAR" Combines

CONSTRUCTION EQUIPMENT CO.

1118-1124 Ide Ave., Spokane, Wash.

Archer Iron Works
Bebe Bros.
Blystone Mfg. Co.
Broderick & Bascom Rope Co.
Buffalo-Springfield Roller Co.
Butler Bin Co.
Chain Belt Co.
D-A Lubricant Co.
Detroit Graphite Co.
DeWalt Products Co.
Elgin Sales Corp.
Fate-Roof-Heath Co.
Climax Eng. Co.
Ideal Power Lawn Mower Co.
Le Ro Co.
Linde Air Products Co.
Fairbanks, Morse & Co.
Member: Associated Equipment Distributors

M. & M. Wire Clamp Co.
Niagara Mfg. Co.
Novo Engine Co.
St. Regis Paper Co.
Sheidow Mfg. Co.
Speeder Mfg. Corp.
Sterling Wheelbarrow Co.
Sullivan Machinery Co.
Sunbeam Mfg. Co.
Templeton, Kent Co.
Kalamazoo Railway Supply Co.
Williams Buckets & Trailers
Willamette-Ersted Co.
Wyoming Shovel Works
Young Iron Works

JOS. S. POTTS, JR. COMPANY*Factory Sales Engineers*

Travelers Bldg. Richmond, Va.
Representing
Bucyrus-Erie Co. Boston Woven Hose &
McKiernan-Terry Corp. Rubber Co.
Delco Concentrator Sprague Electric Hoists
Co. Div.
National Wire Cloth Co. Williams Buckets and
Trailers Taylor Engrg. & Mfg.
Co.
A. Leschen & Sons Rope Co.
and other leading manufacturers

**HAVE YOU CHANGED YOUR
LOCAL ADDRESS?**

Sometimes in the rush of moving to a new location you fail to send us your new address. And as we are anxious to get your copy of the magazine to you on time do not put off writing us. Thank you.

**CONTRACTORS AND ENGINEERS
MONTHLY**

470 Fourth Ave. New York

GENERAL MACHINERY CO.East 3500 Block Riverside Avenue
Spokane Washington*Representing*

Ohio Power Shovel Co.
General Excavator Co.
Bay City Shovels, Inc.
Smith Engineering Works
Jaeger Machine Co.
Superior Engine Co.
Hercules Motors Corp.
DeLaval Steam Turbine Co.
General Electric Co.
John A. Roebling's Sons' Co.
Cleveland Wheelbarrow Co.
Midwest Locomotive Works

**LOOK THIS DIRECTORY
OVER CAREFULLY**

If you find any errors while checking over this directory will you please advise us at once, because it is our desire to keep it accurate and up-to-date at all times.

**CONTRACTORS AND ENGINEERS
MONTHLY**

470 Fourth Ave. New York

Southern Machinery & Supply Co.

Roanoke Virginia

"All Kinds of Machinery"

Austin-Western Road Littleford Bros.
Machinery Co. Cleveland Tractor Co.
The Osgood Co. Linn Manufacturing
Vulcan Iron Works Corp.
Chain Belt Co. Gruendler Crusher &
The Novo Engine Co. Pulv. Co.
Austin Machinery Corp. Columbus Conveyor
George Haiss Manufac- Co.
turing Co. Power Manufacturing
Heltzel Steel Form & Co.
Iron Co. Gardner-Denver Co.
*Contractors' Equipment in Stock in our
Roanoke Warehouse*

HOFIUS-FERRIS EQUIPMENT CO.728-802 Mallon Avenue
Spokane Washington

Road Building, Logging and Power
Farming Equipment

Representing

CATERPILLAR TRACTOR CO.
Tractors — Graders — Harvesters

SHOP — SERVICE**SMITH-COURTNEY COMPANY**7th & Bainbridge Sts. Richmond, Va.
Representing

JAEGER—Mixers, Hoists and Pumps
WORTHINGTON—Air Compressors
BROWNING—Cranes and Shovels
CLEVELAND—Rock Drills
HOMELITE—Portable Pumps
CYCLONE—Road Guard
LAKEWOOD—Towers and Paving Equipment
SKILSAW—Electric Saws
EEBE—All Steel Hand Hoists
Complete Stock of Contractors' Supplies
and Accessories

GEIJSBEEK ENGINEERING CO.

Arctic Building Seattle, Wash.

Representing

HANSON Excavators
FATE-FOOT-HEATH Crushers
EAGLE Sand and Gravel Plants
HARDINGE Grinding Mills
NORTH AMERICAN REFRAC-
TORIES CO.—Fire Brick
Pumps, Compressors, Drilling Tools
Contractors' Scientific Instruments

Bluefield Supply CompanyBluefield W. Va.
Representing

Blaw-Knox Co. Goodyear Rubber Co.
Ingersoll-Rand Co. E. I. DuPont de Nemours & Co.
National Equip. Corp. Williamsport Wire
Novo Engine Co. Rope Co.
Johns-Manville Corp. General Electric Co.
Cleveland Tractor Co. American Saw Mill Brookville Locomotive
Machy. Co. Co.
A. B. Farquhar Co., Ltd.
Authorized Waukesha Service

WE DO NOT CHOOSE TO RUN—

anything in this Directory that is not accurate and up-to-date. Therefore, if you find any errors or corrections we hope you will let us know about them. Thank you.

**CONTRACTORS AND ENGINEERS
MONTHLY**

470 Fourth Ave. New York

PACIFIC HOIST & DERRICK CO.*Machinery and Equipment*
3200 4th St. Seattle, Wash.*Representing*

NORTHWEST—Gas and Electric Shovels,
Oranes and Draglines
BUHL—Air Compressors
TWIN DISCO—Clutches for all purposes
PAGE—Scraper Buckets, Diesel Draglines
MINNEAPOLIS—"Twin City" Gas Engines
CLIMAX—Gasoline Engines
WISCONSIN—Gasoline Engines
MIDWEST—Locomotives
DAKE ENGINE CO.
PIONEER—Gravel Equipment
ISAACSON IRON WORKS—Buckets
Member: Associated Equipment Distributors

GENERAL EQUIPMENT CO., Inc.414 No. Fourth St. Clarksburg, W. Va.
Representing

CATERPILLAR TRACTOR CO.—Tractors, Graders
DETROIT HARVESTER CO.—Street Sweepers, Mowers
KILLEFER MFG. CORP.—Plows and Discs
HUBER MFG. CO.—Gasoline Rollers
ATHY TRUSS WHEEL CO.—Crawler Wagons
GARDNER-DENVER CO.—Compressors and Jackhammers
STERLING WHEELBARROW CO.—Wheelbarrows
BLAW-KNOX CO.—Road Forms, Batches, Bins, etc.
LA PLANT-CHOATE MFG. CO.—Bulldozers, Snow Plows
AMERICAN CABLE CO.—Tru-Lay Rope
BURCH CORP.—Conveyors, Car Loaders and Spreaders
NORTHWEST ENGINEERING CO.—Gasoline Shovels
BARNES MFG. CO.—Pumps
JAEGER MACHINE CO.—Concrete Mixers
HERCULES POWDER CO.—Explosives & Blasting Supplies
EUCLID ROAD MACHY CO.—Earth Moving Equipment
DAY—Crushers
PIONEER GRAVEL EQ. MFG. CO.—Gravel Loading Equip.

DIRECTORY OF DISTRIBUTORS

WEST VIRGINIA—WYOMING

BAILEY-TRENN MACHINERY CO.
20th St. & B. & O. R. R. Huntington, W. Va.
Caterpillar Tractor Co.
Athey Truss Wheel Co.
Allsteel Products Mfg. Co.
LaPlant-Cheate Mfg. Co.
Northwest Engineering Co.
Euclid Road Machinery Co.
Detroit Harvester Co.
Williamette-Ersted Co.
Gardner-Denver Co.
Huber Roller Co.
W.K.M Co., Inc.
Heitzel Steel Form & Iron Co.
Universal Crusher Co.
Burch Corp.
Foots Co.
American Tractor Equip. Co.
Davey Compressor Co.

BOEHCK EQUIPMENT COMPANY
2404 W. Clybourn St., Milwaukee, Wis.

Representing

Barber-Green Company
Byers Machine Company
Jaeger Machine Company
LeRoi-Rix Air Compressors
A. Streich & Brothers Co.
Williams Buckets & Trailers
Kerner Automatic Hoist Co.
McKiernan-Terry Corp'n
Huber Mfg. Company
W. Toepper & Sons Co.

Symons Clamp & Mfg. Co.
J. P. Curry Mfg. Company
Jones Superior Machine Co.
Sasgen Derrick Company
Aeroil Burner Co., Inc.
Fairbanks, Morse & Co., Inc.
Universal Form Clamp Co.
Moloch Foundry & Mach. Co.
J. S. Mundy Hoisting Engine Co.

ENGINEERS AND CONTRACTORS SUPPLY COMPANY

West Allis

Wisconsin

Representing

Austin Machinery Corporation
Browning Crane & Shovel Co.
Remmel Concrete Mixer Co.
Belmont Packing & Rubber Co.
Whiting Leather & Belting Co.
Complete line of Concrete Product Equipment.
Block, Brick and Tile Machines.

Any errors?

If you will find any errors on these pages, will you please notify us so we can correct them?

Address

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue New York

CHADWICK MACHINERY CO.

Contractors' Equipment
2460 Clybourn St. Milwaukee, Wis.

Representing

Broderick & Bascom Rope Co.
Drake-Williams-Mount Co.
Flexible Rd. Joint Machine Co.
Heitzel Steel Form & Iron Co.
Leach Company
Manitowoc Engineering Works
Mead-Morrison Mfg. Co.
Schramm, Inc.
Sterling Machinery Corp.

HUNTER MACHINERY COMPANY

327 So. 16th St. Milwaukee, Wis.

627 E. Mifflin St. Madison, Wis.

ARCHER Towers
BATES Wire Ties
BLAW-KNOX Bins, Forms
CHAIN BELT Mixers, etc.
PULSOMETER Steam Pump
ROSS Snow Plows
SAUGEN Derricks
HOMELINE Pumps
LESCHEN Wire Rope
"Caterpillar" Dealers for Southern Wisconsin
Trackson Company
Euclid Road Machy. Co.
Blaw-Knox Atco Div.
LaPlant-Cheate Mfg. Co.
Also Handle "Cat." Attachments, Wagons, Etc., Made by
Member: Associated Equipment Distributors

T. W. MEIKLEJOHN CO.

520 No. Main St. Fond du Lac, Wis.

Representing

Speeder Machinery Corp.
W. A. Riddell Co.
Sauerman Bros., Inc.
Wehr Co.
Trackson Co.
Willamette-Ersted Co.
Fordson Distributor in Wisconsin, Illinois, Iowa, Indiana and Michigan

CUNNINGHAM-ORTMAYER CO.
429 W. Michigan St. Milwaukee, Wis.

Distributors

BUTLER—Bins and Measuring Devices
CAREY—Elastite Joints and Building Materials
C. H. & E. Pump, Hoses and Saw Rigs
CONCRETE ENGR. CO.—Reinforcing Steel
DOWFLAKE—Calcium Chloride
DAVENPORT—Shovel Rollers and Snow Plows
INGERSOLL-RAND—Compressors, Concr. Breakers, Diggers
LAKEWOOD—Road Finishing, Subgraders, Claving Equip.
LITTLEFORD—Road and Street Maintenance Equipment
KOEHRING—Shovels, Pavers, Dumpsters and Mud Jacks
PARSONS—Ditchers and Trenchers
SERVISE—Hand Shovels, Scops and Spades
SMITH, T. L.—Pavers and Mixers
STERLING—Wheelbarrows
TUF-COTE—Waterproof Paper
WEHR—Rollers, Power Graders
WILLIAMS—Form Clamps and Accessories
Member: Associated Equipment Distributors

W. A. NELSON EQUIPMENT CO.

534 No. 25th St. Milwaukee, Wis.

Representing

WORTHINGTON—Portable Air Compressors, Air Tools
CONSTRUCTION MACHINERY CO.—Pumps, Hoists, Saw Rigs, Material Elevators
NOVO—Engines, Pumps, Hoists
STERLING—Wheelbarrows
ERIE—Bins, Clamshell Buckets

HAVE YOU CHANGED YOUR LOCAL ADDRESS?

Sometimes in the rush of moving to a new location you fail to send us your new address. And as we are anxious to get your copy of the magazine to you on time do not put off writing us. Thank you.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave. New York

DROTT TRACTOR CO., INC.

3841 Wisconsin Avenue

Milwaukee Wisconsin

Representing in the State of Wisconsin and Upper Peninsula of Michigan:

ALLIS-CHALMERS — Industrial and Track Type Tractors, Power Operated Elevating and Blade graders, Motor Patrol graders, Track Type Wagons
PIONEER—Gravel Equip.
DROTT—Bulldozers & Scrappers
WAUSAU—Snow Plows
TWO-WAY-DRIVE—Super Trucks

DAVEY Air Compressors
KINNEY Road Oilers
TORO Highway Mowers
HERCULES Road Rollers
HIGHWAY Trailers
CLEVELAND Rock Drills
WILLET Track Blades
HANDY SANDY Sand Spreaders
SHAW ENOCHS Pull Type Graders

ROBERT T. TWEDT CO., INC.
15th St. and Pioneer Ave. Cheyenne, Wyo.

Representing

"CATERPILLAR" Tractors and Graders
LaPLANT-CHEATE Snow Removal and Dirt Moving Equipment
KILLEFER Scraper, Frontos & Road Ripper
ATHLEY TRUSS Wheel Wagons
EUCLID Road Machinery
MACWHYTE Wire Rope
OIL FIELD Hoists and Equipment
GOOD DRILLS Champion Sand & Gravel Equip.
WIARD Road Plows
WAUSAU Bulldozers, Snow Plows and Bulk Fillers
SPEEDER Draglines and Shovels
MASTER Loaders and Rotary Scrapers
DETROIT Mowers, Sweepers & Snow Brushes
WILLIAMS Buckets and Heavy Duty Trailers

Three Lists Worth Consulting:

Valuable Catalogs for Contractors	.	pages	50, 52 and 54
Equipment Distributors' Directory	.	pages	58 to 77
Engineers' Directory	.	pages	55 to 57

If you don't find what you want in these lists, write us.

CONTRACTORS AND ENGINEERS MONTHLY

470 FOURTH AVENUE

NEW YORK

CANADA

Alberta
British Columbia
Manitoba
Ontario
Quebec
Saskatchewan

FERGUSON SUPPLY CO., Ltd.
CALGARY

Representing

Northwest Engineering Co.
Page Engineering Co.
B. Greening Wire Co., Ltd.
London Concrete Mch. Co., Ltd.
Iowa Mfg. Co.
Herbert Morris Crane & Hoist Co., Ltd.
Worthington Pump & Mch. Corp.
Templeton, Kenly & Co., Ltd.
Federal Belting & Asbestos Co., Ltd.
Moon Manufacturing Co.
Factory Equipment Ltd.
J. L. Goodhue Co., Ltd.
Jeffrey Manufacturing Co.
Canadian Hoists & Conveyors, Ltd.
Dominion Rd. Mch. Co., Ltd.

BROWN, FRASER & CO. Ltd.
Vancouver British Columbia, Can.

Representing

BAY CITY Shovels and Cranes
CASEY JONES Speeders
CEDAR RAPIDS Gravels Plants, Crushers
CLETRAC Tractors
GALION Road Machinery
HAIS Mechanical Loaders and Excavators
HERCULES Engines and Power Units
HUMDINGER Pumps
PLYMOUTH Gas and Diesel Locomotives
SAUERMAN Scrapers and Excavators

MORRISON TRACTOR & EQUIPMENT CO. Ltd.

940 Station St. Vancouver, B. C.

BRITISH COLUMBIA DISTRIBUTORS FOR
Caterpillar Tractor Co.
Tractors—Graders—Combines
Pioneer Gravel Equipment Mfg. Co.
American Tractor Equip. Co.
LaPlant-Cheate Mfg. Co.
Athey Truss Wheel Co.
Killefer Mfg. Corp.
Rotary Snow Plow Co.
Detroit Harvester Co.
Day Pulverizer Co.

WILLARD EQUIPMENT, LIMITED

Vancouver, British Columbia, Canada

Municipal and Construction Supplies

Representing

HAMILTON LTD., Ed. Mohy.
THE PEDLAR PEOPLE—Vertical Retort Ovens
LIMITED, Ontario—Sheet Metal Products
FRANCIS HANKIN & CO., Ltd.—Montreal, Quebec—
Vane Metres, Etc.
RANSOMES SIMS & JEFFRIES, Ltd.—Ipswich, Eng.—Lawn Mowers
DENNIS BROS. LTD., Guildford, Eng.—Lawn Mowers
WOODALL - DUCKHAM VERTICAL RETORT & OVEN CONSTRUCTION

KIPP-KELLY, Ltd.
68 Higgins Ave. Winnipeg, Manitoba

Representing

GARDNER-DENVER — Air Compressors, Tools
KELLER Pneumatic Riveters, Calkers, Drills
LIDGERWOOD — Hoists, Derricks, Excavators, etc.
ORENSTEIN & KOPPEL — All Types Industrial Cars
PETTERS — Oil Engines and Generating Sets
WHITCOMB — Gasoline, Oil, Electric Locomotives
MORRIS — Cranes, Hoists, Blocks, Crane Trucks
REPAIR PARTS AND SERVICE SHOPS

LONDON CONCRETE MACHY. CO.
LONDON

Representing

ARCHER Tower Hoist Equipment
BLACKMER Pumps
CONSOLIDATED Concrete Machinery
FOOTE Pavers
MOVO Gasoline Engines
Concrete Mixers—Tilting and Non-Tilting
Concrete Block Machines
Cement Brick Machines
Hoisting Engines
Centrifugal, Diaphragm and Rotary Pumps

EVERYTHING FOR THE CONTRACTOR

CANADIAN EQUIPMENT CO., LIMITED

1111 Beaver Hall Hill Montreal, P. Q., Can.

Representing

Industrial Brothoist Corp.
Orr & Sembower, Inc.
Barnes Manufacturing Co.
Cleveland Tractor Co.
Prink Snow Plows
Rotary Snow Plows
Austin Manufacturing Co.
Butler Bin Co.
Hercules Motors Corp.
New England Road Machy. Co.
Gardner-Denver Co.
Marion Steam Shovel Co.

GENERAL CONSTRUCTION MATERIAL CO., LTD.

1194 Stanley St. Montreal, P. Q.

Sales Agents in Quebec Province

BAY CITY—Electric and Gasoline Shovels
“SOLVAY” Calcium Chloride
MARMON-HERRINGTON—Four-wheel and Six-wheel drive Trucks
DIAMOND—Sand & Gravel Equipment, etc.
DYER—Welding Machines—Electric
FREEMAN—Truck Turntables

GALION—Road Machinery
SHUNK—Graders and Drag Blades, etc.
STERLING—Hoists and Air Compressors
SHAW - ENOCHS — Pull-Type Power Graders and Maintainers
“STELCO”—Snow Fence and Steel Posts
MAINE—Snow Plows for Tractors and Trucks
NEW ENGLAND — Power Loaders, etc.
CARTER—Humdinger Pumps

HOPKINS-OSBORN LIMITED

Successors to F. H. Hopkins & Co. Ltd. and Clare Osborn Ltd.

Dominion Square Bldg. MONTREAL

Representing

FATE-ROOT-HEATH CO.—BUCYRUS-ERIE CO.—Locomotives all types
ALLIS-CHALMERS MFG. CO.—Tractors
Air Compressors and Pumps
Blade Hole Drills
Cableways and Derricks
Chuting Plants, Batch Bins
Clamshell Buckets
Concrete and Truck Mixers
Crushing & Screening Plants
Dredging Machinery
Excavators and Graders
Hoists and Loaders

Industrial Cars
Locomotive Cranes
Pile Drivers & Hammers
Power Drag Scrapers
Road Finishing Machines
Road Rollers
Tractors
Tractor Dump Wagons
Track Shifters
Washing Plants

JUST EQUIPMENT & SUPPLY CO., Ltd.

173 Colborne Street Montreal, Que., Canada

Athey Truss Wheel Co.
Buffalo-Springfield Roller Co.
Caterpillar Tractor Co.
E. D. Elmre & Company
Hi-Way Service Corp.
AllSteel Products Mfg. Co.
LaPlant-Cheate Mfg. Co.
National Steel Car Corp., Ltd.
National Equipment Corp.
Koehring Div., Parsons Div., Kwick-Mix Div.
Schramm, Inc.
American Tractor Equip.
Lenhart Wagon Co.
Hardsoog Wonder Drill Co.
Northern Conveyor & Mfg. Co.
Pittsburgh-Des Moines Co.
of Canada, Ltd.

WE WOULD LIKE TO HAVE YOU HELP US

make this Directory of Dealers in construction equipment the most complete and accurate of its kind. Therefore, we would greatly appreciate any suggestions or corrections that you may have to offer.

CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Avenue New York

THE ALBERT OLSON CO. LTD.

1148-50 Osler Street REGINA SASKATCHEWAN CANADA

Representing

“CATERPILLAR” Tractors
“CATERPILLAR” Road Equipment
“CATERPILLAR” Combined Harvesters
TONCAN Metal Culverts
PIONEER Gravel Equipment
LENHART Dump Wagons
LA PLANT-CHOATE Equipment
KILLEFER Scrapers
EUCLID Equipment
P. & H. Shovels and Cranes

TRUCK & TRACTOR EQUIPMENT CO., LTD.

661 Queen St., E. Toronto, Canada

Representing

Hughes-Keenan Co. Hughes-Keenan Iron Mules
Trackson Co. Olson Extensions
W. A. Riddell & Co. Rock Hand Hoists
Universal Power Perry Scraper Co.
Shovel Co. Kingham Trailers
Taco Governor Brookville Locomotives
Fordson Tractors General Excavator Co.
Sargent Snow Plows Trojan Road Rippers
Osgood Co. Bates Tractors
Trucktor Corp. Willett Mfg. Co.

MEXICO ARIZONA TRADING CO., S.A.

Nogales, Sonora Ciudad Obregon, Sonora

Culiacan, Sinaloa

(Export Offices: Nogales, Arizona)

Representing

“CATERPILLAR” Tractors
“CATERPILLAR” Harvesters
“CATERPILLAR” Road Machinery
WILLIAMETTE-ERSTED Hoists
VENTURA Scarifiers and Implements
ATECO Bulldozers
BEAN Implements
TOWNER Tools and Implements

INDEX TO ADVERTISERS IN THIS ISSUE

*This index is published as an aid to the reader, but the publishers
assume no responsibility for errors or omissions.*

Alamo Iron Works.....	74	E. K. S. Equipment Co.....	64	Key, John R.....	65	Rabbeitt, Inc., C. F.....	65
Alban Tractor Co., Inc.....	63	Earnest Bros.....	74	Keystone Builders Supply Co.....	68	Raleigh Tractor & Equip. Co.....	69
Allegheny Equip. Corp.....	72	Easton Tractor & Equipment Co.....	62	Kipp-Kelly, Limited.....	77	Rapid Tractor & Equip. Co.....	73
Allied Constr. Equip. Co.....	65	Edelen & Boyer Co.....	72	Kratz & McClelland, Inc.....	59	Read Corp., Howard W.....	72
Allis-Chalmers Manufacturing Co.....	7	Ehrbar, Inc., Edward.....	66	Kriger & Co., A. H.....	73	Reeves-McCormick, Inc.....	68
American Hdw. & Equip. Co.....	69	Elphinstone, Inc., D. C.....	63	Kuhiman & Co., W. A.....	71	Reiner & Co., Inc., John.....	68
Arizona Tractor & Equip. Co.....	58	Engines & Constr. Supply Co.....	76	Rex-Watson Corporation.....	52	Rex-Watson Corporation.....	52
Arkansas Foundry Co.....	58	Engels Tractor Co., Inc.....	69	Richards & Hirschfeld, Inc.....	68	Richards & Hirschfeld, Inc.....	68
Armstrong & Bros. Co., R. S.....	60	Ensminger & Co.....	73	Rollings, J. Frank.....	70	Ronstadt Hardware & Machy. Co.....	58
Arnold Co., Inc., C. H.....	72	Equipment Co., The.....	63	Rosholz Co., Thorman W.....	64	Rosholz Co., Thorman W.....	64
Austin-Western Road Machy. Co.....	45	Equitable Equipment Co., Inc.....	62	Ross, Lloyd G.....	68	Ross, Lloyd G.....	68
Avery Co., O. B.....	65	Ethyre & Co., E. D.....	2	Lambert Hoisting Engine Co.....	9	S. & L. Equipment Co.....	61
Bacon Co., Edward R.....	59	Build Road Machinery Co., The.....	74	Lange Tractor & Equipment Co.....	64	Service Supply Corp.....	72
Bailey-Treen Machinery Co.....	76	Everett & Co., R. B.....	65	Leland Equipment Co.....	71	Severin Corp.....	5
Balzer Machinery Co.....	71	Fabick Tractor Co., John.....	65	Lemcke, Fred W.....	64	Shannon & Co., J. J. Incub.....	72
Barnard Tractor & Equip. Co.....	72	Fair Co., Elton T.....	59	Lexington Hotel.....	6	Shepherd's Tractor & Equip. Co.....	58
Barret, Thos. L.....	62	Farquharson Machinery Co.....	60	Lincoln Equip. Co., Inc.....	65	Shepperd & Mayer.....	62
Bartolow Co., J. W.....	74	Feenbaugh Machy. Co.....	71	Lippincott & Bros., Inc., C. A.....	66	Slade Tractor Co., Inc.....	68
Blashford-McCord Corp.....	74	Ferguson, Harry J.....	60	Littleford Brothers.....	52	Smith, C. G. F.....	65
Beckwith Machinery Co.....	68	Ferguson Supply Co., Ltd.....	72	Loder & Sharp, Inc.....	72	Smith-Borth-Usher Co.....	59
Benjamin, Julien P.....	60	Fishback, D. E.....	77	London Concrete Machy. Co., Ltd.....	77	Smith-Courtney Co.....	73
Blaw-Knox Company.....	4	Fitzgerald, Paul.....	60	Loomis & Co., C. H.....	66	Smith-Pittman Tractor Co., Inc.....	58
Bluefield Supply Co.....	62	Fitzgerald & Hudson.....	67	Louer Co., W. B.....	61	Smith & Elliott, Inc.....	73
Boardman Co., The.....	71	Fletcher Equipment Co., Inc.....	62	Louis Co., Inc., John C.....	63	Southern Machy. & Supply Co.....	73
Boenck Equipment Co.....	76	Fralay & Son, Lawrence V.....	65	Louisiana Road Machy. Co., Inc.....	62	Southern States Equip. Co., Inc.....	62
Bond Co., The.....	63	Fuchs Equipment Co.....	66	Lowe Co., G. F.....	61	Sprout, Waldron & Co., Inc.....	14
Borchert-Ingersoll, Inc.....	64	Funkhouser Equipment Co.....	65	Lyons Machinery Co., Joe.....	58	Standard Equip. & Supply Corp.....	61
Bowen-Malster Co.....	72	Garfield & Company.....	59	McDonald Tractor Equipment Co.....	60	Standard Machy. & Equip. Co.....	73
Brewster & Williams, Inc.....	61	Gartner Co., F. W.....	74	McGinnis, Neil B.....	58	Standard Oil Co. (Indiana).....	10
Bright, Graham B.....	68	Geijssenk Eng. Co.....	75	McKiernan-Terry Corporation.....	9	Standard Oil Co. of N. Y., Inc.....	51
Brimmer Supply Company.....	73	General Constr. Material Co., Ltd.....	75	McNeilly Machinery Co.....	70	Steele & Conduit Co.....	9
Brooks Co., M. E.....	67	General Equipment Co., Inc.....	75	Maerky Machine Works.....	72	Steinberger Co., H. N.....	60
Brown, Herman M.....	63	General Excavator Co.....	8	Mahoney-Clarke, Inc.....	68	Sterling Tractor Equipment Co.....	66
Brown, Inc., Thomas M.....	63	General Machinery Co.....	75	Malvaise & Company, Geo.....	67	Stith Co., C. L.....	70
Brown-Bevis Co., The.....	59	General Tractor & Equip. Co.....	64	Martin Machinery Co., B. A.....	65	Stockberger Equipment Co.....	61
Brown, F. G. Co., Ltd.....	77	Gesner Equipment Corp.....	60	Mechanical Supplies Co., The.....	69	Stull Co., G. M.....	71
Brown & Siles Co.....	67	Gibbs Machy. Co.....	73	Mexico-Arizona Trading Co., S. A.....	77	Stumpf & Lehti.....	68
Browning-Ferris Machy. Co.....	74	Gierke-Roosin Co.....	62	Meyer Co., The Henry H.....	60	Superior Construction Equip. Co.....	61
Bublitz Machinery Co.....	68	Giles & Ransome.....	72	Midland Implement Co., Inc.....	63	Syracuse Supply Co.....	69
Buell Equipment Corp.....	68	Gledhill Road Machinery Co.....	9	Midwest Tractor & Equip. Co.....	61	Taylor Tractor Co., The.....	70
Buffalo-Springfield Roller Co.....	54	Gohi Culvert Mfrs., Inc.....	12	Miller Equipment Co., Inc.....	69	Texas Company, The.....	67
Builders Supply Co., Inc.....	63	Hall-Perry Machinery Co.....	66	Miller-Sanford Tractor Co.....	71	Tinklepaugh, John R.....	61
Bunting Tractor Co.....	71	Hamilton Tractor & Equip. Co.....	61	Mine & Smelter Equipment Co.....	58	Tractor & Machinery Co., Inc.....	60
Burke, Cyril J.....	63	Harris, Inc., R. L.....	74	Nashville Tractor & Equipment Co.....	74	Truck & Tractor Equip. Co., Ltd.....	51
Burlew Company, F. H.....	61	Havercostick & Co., Inc.....	68	National Carbide Sales Corp.....	79	Truscon Steel Company.....	51
Canadian Equipment Co., Ltd.....	77	Hedge & Mattheis Co.....	63	National Hoisting Engine Co.....	9	Tucker, Joe C.....	62
Carey Co., The Philip.....	47	Heltzel Steel Form & Iron Co.....	63	Nelson Equipment Co., W. A.....	76	Tulley Equipment Co., Inc.....	65
Carolina Contractors' Equip. & Supply Co., Inc.....	73	Hendrie & Bolthoff Mfg. & Supply Co.....	60	Nixon-Nasselle Co.....	73	Turner Supply Co.....	58
Carolina Tractor & Equip. Co.....	69	Hercules Powder Company, Inc.....	54	Noble Co., The K. B.....	60	Twedt Co., Inc., Robert T.....	73
Caterpillar Tractor Co.....	49	Hetherington & Berner, Inc.....	9	Northern Road Equipment Co.....	63	Tyler Co., M. B.....	63
Central Tractor & Equipment Co.....	73	Heynig Bros.....	66	Northfield Iron Co.....	64	United Hoisting Co., Inc.....	68
Chadwick Machinery Co.....	76	Hirschfeld, H. M.....	66	Northwest Equip. Co., Inc.....	66	Upper Peninsula Tractor Co.....	64
Choctaw Culvert & Machy. Co.....	53	Hobbs, Lewist F.....	74	O'Brien Co., Inc., Martin J.....	73	Van Name, Eugene F.....	67
Clark & Burrows, Inc.....	74	Hofius-Ferris Equipment Co.....	75	Ohio Valley Machinery Co.....	70	Virginia Tractor Co., Inc.....	73
Clark-Wilcox Company.....	63	Hopkins-Oshorn, Ltd.....	77	Olson Co., Ltd., The Albert.....	77	Walsh Equipment Co., W. T.....	70
Clyde Ohio Sales Co.....	69	Houston, J. C.....	67	Osborne & Sexton Machy. Co.....	70	Welch Co., Inc., J. H.....	65
Clyde Equipment Co.....	71	Howard-Cooper Corp.....	71	Pacific Hoist & Derrick Co.....	75	Wellman Engineering Co., The.....	68
Coordan Equipment Co., Paul.....	61	Hubbard-Floyd Co., Inc., The.....	67	Pattison Supply Co., The W. M.	70	Western Contractors Supply Co.....	61
Conant Co., C. M.....	63	Hudson Co., A. E.....	61	Perry Machy. Co., Inc., H. O.....	68	Western Material Co.....	73
Concrete Machy. & Supply Co.....	59	Hunt Road Machy. Co., Jeff.....	73	Perkins Co., P. I.....	63	Western Road Machinery Co.....	73
Concrete Surfacing Machy. Co.....	8	Hunter Machy. Co.....	64	Petter Supply Co., Henry A.....	62	Whayne Supply Co., R. C.....	62
Connally Machinery Co.....	65	Hush, Inc., H. J.....	67	Phillips Machine Co.....	75	Wheeler Equipment Co., The.....	73
Construction Equip. Co.....	75	Jaeger Machine Co.....	6	Phillips Tractor Co., Inc., G. C.....	58	White Company, The.....	73
Continental Motor Co.....	4	Jenison Machinery Co.....	59	Pierce Co., Inc., C. V.....	68	Willard Equipment, Limited.....	73
Contractors Sales Corporation.....	66	Johnson & Dealaman, Inc.....	66	Pingry Tractor & Equipment Co.....	64	Williams Co., The W. W.....	70
Contractors Trading Co.....	67	Johnston Co., The Wm. T.....	69	Pioneer Gravel Equip. Mfg. Co.....	5	Williamsport Wire Rope Co.....	68
Corby Supply Co.....	65	Jones Co., The C. H.....	74	Pope Equipment Co., The.....	70	Wilson J. Walker.....	64
Crook Co.....	59	Just Equip. & Supply Co., Ltd.....	77	Potts, Jr., Company, J. S.....	73	Wilson Machy. & Supply Co., Inc.....	65
Cunningham-Ortmayer Co.....	76	Kellam & Shaffer Co., The.....	68	Poughkeepsie Farm Service, Inc.....	68	Wilson-Weesner-Wilkinson Co.....	73
Cuyahoga Equipment Co., The.....	69	Keller Tractor & Equip. Co., Inc.....	64	Powell-Davies Tractor & Equipment Co., Inc.....	73	Yancey Bros., Inc.....	68
Dale & Rankin, Inc.....	66	Kelly Equipment Co., H. P.	69	Power Equipment & Service, Inc.....	60	Yancey Tractor Co.....	68
Darrow & Son, Z. T.....	67	Kern-Limerick, Inc.....	58	Queen City Supply Co., The.....	69	Ziegler Co., Inc., Wm. H.....	88
Davis, Inc., Norris K.....	59						
Davis Engineering Co., C. B.....	59						
Day & Maddock Co.....	58						
De Huff & Hopkins.....	70						
Detroit-Leland Hotel.....	4						
Dienst Co., A. P.....	67						
Dixie Company, R. E.....	9						
Dooree, W. J.....	73						
Drake Tractor & Equip. Co.....	68						
Drott Tractor Co., Inc.....	76						
Dukehart Machinery Co.....	62						

NATIONAL CARBIDE V-G LIGHTS HELPED BUILD THE GOVERNMENT CONSTRUCTION RAILROAD from Boulder City to HOOVER DAM SITE

Used by
LEWIS
CONSTRUCTION
COMPANY



National Carbide Lights are the ideal source of high power, economical lighting—not only for general construction work but also for water companies, shipyards, quarries, railroads, tunnels, subways, telephone companies and municipalities. One of their chief advantages is the ease and convenience of recharging with handy CARBIDE. You always know exactly how long they will run at maximum. Fresh CARBIDE can be put in in a few minutes. . . . No wires, etc., to connect or trip over, no matter where you put them and this light is not easily overturned. For their tremendous light volume they are *lighter* in weight.

National Carbide V-G Lights mean most white light from least carbide—no waste-matter to be paid for or left over. No excess carbide in water to heat it up and make flame red.

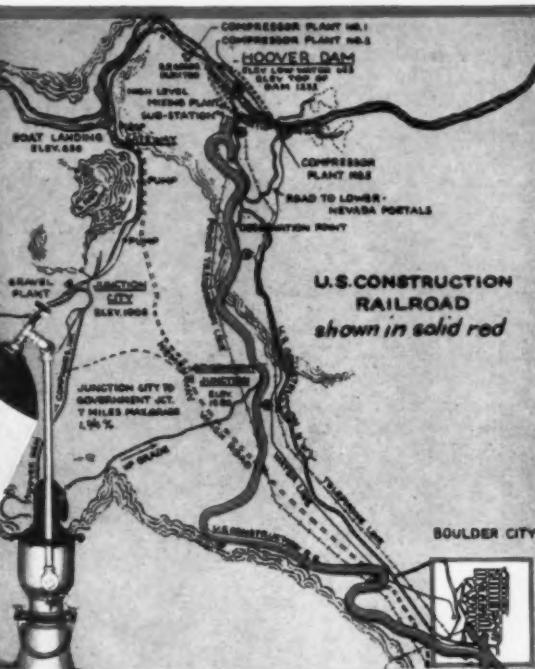
No waste carbide, whether used intermittently or continuously. They have proved their safety, economy and efficiency.

Write for Booklet "Lights" on complete line of V-G Lights, V-G Handy Light and National Carbide Lantern. A Light or Lantern for every purpose.



NATIONAL CARBIDE
SALES CORP.

Lincoln Bldg., New York



8000 C. P.
for 12 hours

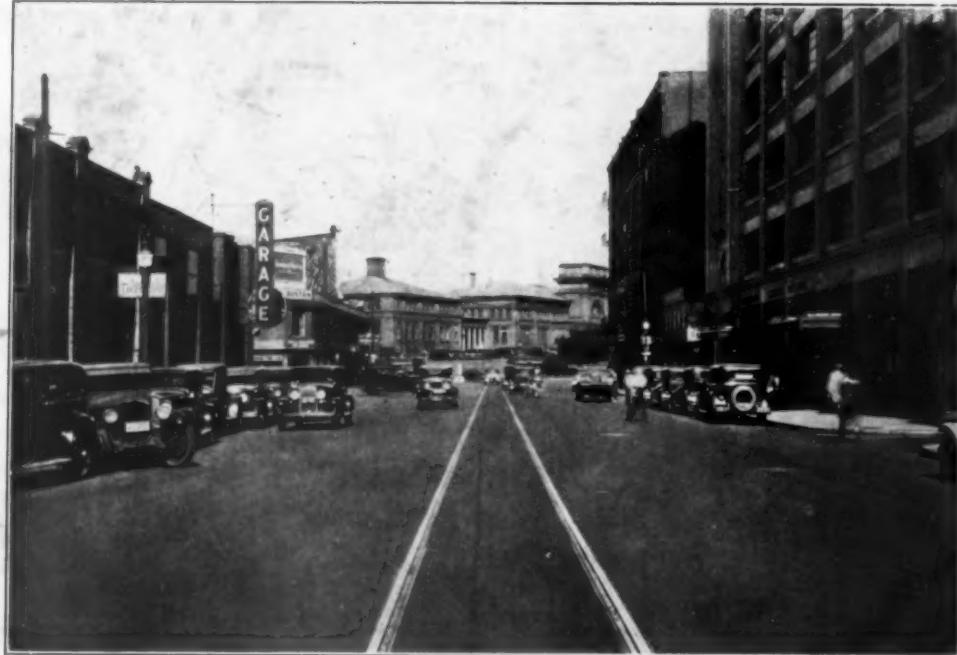
NATIONAL
CARBIDE
V-G LIGHT
PORTABLE DAYLIGHT
NO WASTE



Specify
National Carbide
RED DRUM
Coast to Coast
Distribution



JOBS you will point to— not your competitors



Every paving job you construct now is going to be pointed out one, five, ten years from now—by you, or by your competitors.

If the job stands up, it will be you who calls attention to it. If it is a failure, your competitors will see that it is not overlooked.

Ten, fifteen and twenty-year-old TEXACO Asphalt pavements throughout the country today are an important aid to the contractors who constructed them, in securing new contracts.



Chicago
Cleveland
Kansas City
Houston
Dallas
Buffalo
New York
Philadelphia
Richmond
Boston
Jacksonville

TEXACO asphalt

THE TEXAS COMPANY, *Asphalt Sales Department*
135 East 42nd St., New York City

ONTHLY

